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MANAGEMENT OF THE SERIOUSLY ILL ASTHMATIC

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An essential objective in the treatment of seriously ill asthmatic patients is control of the environment. This usually means hospitalization in a private room especially prepared to eliminate all usual irritants. Four further objectives are rest, control of cough, liquefaction of sputum, and control of anoxemia. A sixth objective must be considered in asthmatic patients of long standing, namely the management of complications such as emphysema, bronchostenosis, respiratory infections, drug allergies, and intercurrent surgical conditions. Steroids will usually control the symptoms of asthma promptly, but their prolonged use is dangerous. Medication affords only symptomatic relief in asthma and cannot overcome the bad effects of poor environmental control.

DESPITE the last two decades' accumulation of knowledge concerning the cause of asthma and the many preparations—including steroids and ACTH—which have been advocated for its treatment, the care of the patient acutely beset with this disease is yet, as always, a challenge. This discussion is directed toward those situations in which the asthma has become so severe, disabling, and refractory to therapeutic measures practicable in the home that hospitalization is desirable, if not imperative.

With these cases our goals today as in the past are to provide symptomatic relief and to establish the cause and the complications, if any, and to remove them. If the asthma is severe, investigation of causative factors is postponed until the condition has been brought under control. As an exception, however, the possibility that some drug allergy is the cause should be considered early. It is not always possible to identify the specific etiological factor, but if it can be found and eliminated, as in patients with extrinsic asthma, the condition can in effect be cured. Actually, if only his symptoms can be controlled the acutely ill asthmatic likely will be very happy and well satisfied. The scientifically motivated physician, however, is always searching for more than this.

Therapeutic Objectives and Methods

In the management of these patients, we conceive five major therapeutic objectives which one should strive to attain as soon as possible after their hospitalization.

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Environmental Control.—Environmental control is approached by placing the patient in a specially prepared private room. Ideally this should be devoid of dust, drafts, drapes, flowers, noise, strong odors, smoke, rugs, and relatives. Dustproof covers should be placed on the mattress and pillows before the patient arrives. A window filter to exclude pollen and dust is essential if pollen is in season or if the hospital is in a dusty location. An asthmatic patient and the care he requires will disrupt the rest and quietude of other patients if he is put in a ward; hence a private room is essential.

If the asthma abates dramatically in the first 24 to 48 hours, extrinsic factors probably have been important in causing it. Conversely, if the asthma fails to improve rapidly under such circumstances it is more likely that intrinsic factors chiefly are responsible for it.

When the acute phase of the asthma has been controlled, then etiological study—including special consideration of possible exposure to allergens consequent to seasonal, dietary, or environmental factors incident to occupation, residence, or travel, as well as the performance and appraisal of skin sensitization tests—may be undertaken. Careful inquiry regarding medicaments which the patient has used and possible allergic reactions to any of these is essential.

"Will a change of climate help?" is a question asked often by the patient or a well-meaning relative. It is not an easy one to answer categorically, since we know of no climate where asthma does not occur. Furthermore, the emotional stress incident to leaving one's established occupation and friends and starting all over again in another part of the country may actually aggravate asthma. If the patient's condition is always worse in cold, damp weather and relatively clear in the summer, the physician might suggest that he try spending several months of the winter period where the weather at that season is warm and dry. Only thereafter, if much improvement is noted, should the patient consider a more permanent change of climate.

Rest.—Relief from the asthmatic paroxysm cannot be expected until the patient is both mentally and physically at ease; thus rest becomes a second major objective of treatment. Anxiety is a prime factor in aggravating the severity of status asthmaticus. Through loss of sleep, mounting fears, and the tiring effect of repeated episodes of breathlessness, a self-perpetuating state of utter physical and emotional exhaustion develops.

The reassuring approach and confident attitude of the physician are effective remedies for this condition. Let nothing ever be said in the presence of the patient by physician or nurse which could lead the patient to believe that his condition is out of the ordinary in any way or that the outcome will be anything but favorable.

The intelligent use of sedatives also is important in securing rest for the patient, but one must bear in mind that asthmatics as a group tolerate them poorly. Those which have a depressant action on the respiratory center should not be used. We prefer to rely on such preparations as chloral hydrate, paraldehyde, and phenobarbital. Because of their sedative effect certain antihistamines may be useful in such cases. Chlorpromazine and promazine (Sparine) have been helpful in tranquilizing these patients. In our opinion, drugs such as morphine, codeine, meperidine (Demerol) hydrochloride, and dihydromorphinone (Dilaudid) hydrochloride are to be avoided strictly, some because of their depressant action on the respiratory center and all because of their habit-forming properties.

When the acute asthmatic symptoms are controlled, for the long-term purpose of enabling the patient to avoid exacerbation of his asthma by leading a tranquil life, psychiatric consultation may be considered in selected cases. We believe that very few asthmatic patients need complete psychiatric evaluation, but there is a small group with emotional problems who may derive some help from this approach.

Control of Cough.—Coughing aggravates bronchitis and produces bronchospasm and thus increases dyspnea and wheezing; control of it is an important third objective. Many patients have the habit of overcoughing, which can itself be exhausting and debilitating.

The physician should keep encouraging the patient to try earnestly to suppress his desire to cough. The simple device of having him suck on some hard candy may help much in this regard. Also, it is important for him to avoid the inhalation of all types of respiratory irritants, since these provoke coughing. As examples may be mentioned cold air, irritating fumes, strong odors, and smoke from tobacco and other sources, including that from burning stramonium leaves. In our opinion, no asthmatic patient should smoke. Finally, inhalations of steam seem to mitigate bronchial irritation for some patients and thus allay the desire to cough.

Liquefaction of Sputum.—Many persons who have died in status asthmaticus have been found to have the terminal bronchi plugged with casts of mucus which they have been unable to raise. Liquefaction of sputum thus is another major objective.

Hydration is one approach to this problem. The sputum in most cases of status asthmaticus is thick and tenacious, and is raised with difficulty because the patients are dehydrated. Adequate intake of fluid combats this effectively in many instances.

The intravenous administration of 2 to 3 liters of 5% glucose may be warranted during the first 24 hours of hospitalization, especially if the weather is warm or if the patient is not taking fluids well by mouth. One must be careful not to give too much fluid parenterally to individuals whose asthma is complicated by borderline cardiac decompensation or early cor pulmonale with severe emphysema. When the patient becomes able to drink 10 to 14 glasses of liquid daily, the intravenous administration of fluids as a hydrating measure may be discontinued.

Expectorants should be accounted an adjuvant to hydration, since their thinning effect on sputum is negligible until the patient's body fluids are restored. Effective preparations of this group are sodium iodide and potassium iodide; we usually employ a total daily dosage of 0.65 to 1 Gm. Intolerance commonly is manifested by painful, swollen salivary glands 24 to 48 hours after the medication is started, or as an iododerma which may become apparent after four to seven days of administration. The development of periarteritis nodosa following the use of iodides has been reported.[1] We have encountered one serious reaction, possibly partly of this type, with fatal termination. Sensitivity to penicillin likely was the major etiological factor, although a reaction to the iodide may have contributed also. The use of arsenic for these patients is to be avoided because of the serious cumulative toxic effects of this substance. For patients clinically sensitive to iodides, ammonium chloride may be used as a substitutive expectorant, although its effectiveness in this regard is less.

The use of highly purified proteolytic enzymes and certain detergent solutions by aerosolization has been advocated for diseases like asthma in which thick, viscid sputum is a problem, but our experience with these preparations is that they are irritating and not helpful.

Control of Anoxemia.—In status asthmaticus, anoxemia is the consequence of excessive secretion of mucus by the bronchial mucosa, edematous swelling of this mucosa, and bronchoconstriction. Control of anoxemia is the fifth objective, and the use of bronchodilators and the inhalation of gases help to achieve it.

Of the bronchodilators, aminophylline (a xanthine derivative) is useful, either intravenously in a dosage of 0.25 Gm. or rectally as a suppository or retention enema in a dosage of 0.5 Gm. Theophylline-methylglucamine (Glucophylline) rectal suppositories are equally effective and rarely cause rectal irritation. When the acute phase of the asthma has passed aminophylline may be used orally, often in combination with an ephedrine derivative and phenobarbital: but its therapeutic efficacy by this route of administration is less.

Ephedrine or related substances like phenylpropanolamine (Propadrine) hydrochloride or methoxyphenamine (Orthoxine) hydrochloride are used commonly with aminophylline and a sedative. Ephedrine is supposed to slow the rate of enzymatic destruction of endogenous epinephrine. It may cause cerebral excitation or increase in the symptoms of prostatic obstruction; hence it must be used with some care in older men. Methoxyphenamine reputedly has less vasospastic action than ephedrine and thus may be used with greater theoretic safety in asthmatic patients with severe hypertension.

In status asthmaticus, epinephrine and its derivatives usually have lost their effectiveness in relieving bronchospasm, at least temporarily. If they have not, or when the status is controlled, they should be tried. Epinephrine may be taken by inhalation, most frequently, of a 1% solution. It should be used with some caution in the aged. Patients who are to take it by injection should use a 1:1,000 aqueous solution and should be instructed in self-administration. This helps to obviate anxiety which they may feel during acute attacks while waiting for the physician to come.

Isoproterenol, which is isopropyl norepinephrine, is supposed to cause fewer cardiovascular side-effects. It is to be used only by inhalation, either as an aqueous solution or as a powder (Norisodrine).

The inhalation of oxygen either alone or in combination with helium is another effective way to combat anoxemia. The percentage of oxygen used in the mixture may range anywhere from 20 to 100 and is determined by what seems to afford the patient the most relief. If helium is part of the mixture employed, it is well to advise the patient that his voice will be high pitched during the period of inhalation.

There are three effective ways by which oxygen can be administered. The first is by means of a nasal catheter. It is the simplest method and affords an effective concentration of the gas, though not so high as the other ways. The second is by the oxygen tent. This makes possible a concentration which approaches 50% and has the added advantage of providing the patient with an air-conditioned, allergen-free atmosphere. The third method of administration is the BLB mask. This is the only efficient and economical way to administer mixtures of oxygen and helium, and the device also makes possible the administration of 100% oxygen.

The inhalations of oxygen by patients who have severe asthma without significant degrees of emphysema may be continued for 24 to 48 hours or may be used intermittently, depending on how the patient is progressing. Positive-pressure devices such as the Bennett valve or mine safety valve have not proved helpful at the Mayo Clinic in the treatment of status asthmaticus.

Complications

In the over-all and long-term handling of bronchial asthma, special consideration is required for a number of conditions which may be associated with it or develop during its course. The control of these complications as it relates to the management of severe asthma might be regarded as a sixth objective.

Emphysema.—A complication encountered not infrequently, emphysema poses hazards in one of three ways. The first is that the overuse of oxygen may lead to an alarming train of developments. In severe emphysema, there is difficulty in ridding the venous blood of its accumulated carbon dioxide. Hence there is some increase in the carbon dioxide content of the circulating blood, and the respiratory center becomes less sensitive to it. Oxygen want rather than carbon dioxide accumulation becomes the regulating factor of respiration. The administration of high concentrations of oxygen by inhalation under such circumstances may suppress the respiration and lead to hypercapnea, convulsive seizures, and transient coma. This danger is less if the oxygen is given by means of a nasal catheter.

The second hazard is the spontaneous rupture of an emphysematous bleb. Should this be situated on the visceral pleura, spontaneous pneumothorax will result. If the rupture occurs on the mediastinal pleura, the patient will develop mediastinal and subcutaneous emphysema.

The third hazard is the development of acute cor pulmonale with congestive failure and sometimes rather sudden death. The prophylactic digitalization of patients with this type of problem has much to be said in its favor.

Therapeutic measures to be considered for emphysema include breathing exercises, the inhalation of bronchodilating drugs, intermittent positive-pressure breathing, pneumoperitoneum, and the use of an abdominal belt. Control of cough and the associated bronchitis is most important. Our results from the use of radioiodine and those reported by others [2] have not been encouraging.

Bronchostenosis.—Another complication, bronchostenosis, was found in 327 instances in a recent series [3] of 1,034 asthmatic patients who underwent bronchoscopy. Bronchostenosis produces the sputum retention syndrome, which is characterized by fever, cough, hemoptysis, and usually exacerbation of the asthma. Often the condition is diagnosed as pneumonia; but physical examination discloses suppression of the breath sounds distal to the stenotic bronchus, and 30% of the 327 cases afforded roentgenographic evidence of atelectasis in the same area. Bronchoscopic examination and dilatation of the stenotic bronchus was followed by marked improvement of the asthma in many instances.

Respiratory Infections.—Acute infections in any part of the respiratory system, such as pneumonitis, tracheobronchitis, or sinusitis, complicate the management of severe asthma. The prompt, adequate use of antibiotics will lessen the hazard of these. Surgical operations on the sinuses as indicated should be carried out when the acute infection has subsided or if the suppurative disease of the sinuses is chronic.

Surgical Conditions.—Special precautions must be taken for the asthmatic patient in whom indications for surgical measures appear. Generally speaking, elective operations should be deferred until the asthma is controlled; but conditions such as malignancy, acute cholecystitis with stones, complicated duodenal ulcer, or a large hernia may render early treatment imperative, despite the potentially increased risk. The preoperative use of steroids will help to get intractable asthma under control before operation; and certainly if the patient has been taking steroids for some time already, they should be used to enable him to stand the extra stress of an operation.

In selecting anesthetics one must remember that asthmatic patients, more often than most, react unexpectedly and badly to those ordinarily used—for example, to cocaine given topically for bronchoscopy or to thiopental sodium given intravenously. Ether is one that may be used safely, and it may even help to control the asthma.

Finally, the frequency of postoperative complications such as atelectasis may be lessened by repeated inhalations, during five minutes every hour for a few days postoperatively, of a mixture containing 95% oxygen and 5% carbon dioxide.

Drug Allergy.—The management of asthma may be complicated greatly by drug allergy, unless this condition is suspected and detected early. The clinician must be certain that the patient is taking no medicament to which he might be sensitive, such as aspirin and its derivatives or certain antibiotics.

Other Complications.—A few rarer complicating conditions may be mentioned. Laryngeal lesions may simulate, may be coexistent with, and if unrecognized certainly will hinder the effective management of severe asthma. A laryngeal tumor or paralyzed vocal cords secondary possibly to malignant changes in the thyroid should be excluded early. Additional infrequent complications of status asthmaticus include rupture of the esophagus,[4] spontaneous fracture of a rib, and tussive syncope.

Use of Steroids and Corticotropin

A discussion of the management of the seriously ill asthmatic would not be complete without a few general comments on the role of steroids and corticotropin in this problem. Although medical literature is replete with articles on the use of steroids in allergic disorders, the mechanism by which they alleviate asthma still is not established. They relieve stress, and essentially their use is symptomatic. Some evidence indicates that their usefulness is on the basis of an antihyaluronidase effect.

It is fair to state that the most common misuse of steroids is their overuse. We believe that the following are the main indications for employing steroids or corticotropin in this group of patients: (1) serious asthma which has not responded to standard therapeutic procedures, (2) asthma so critical as to allow no time either to try simpler measures or to assess contraindications for steroids, (3) acute exacerbation in a patient in whom steroids had been used continuously for several months already (an indication for increased dosage as a temporary expedient), (4) the need to get an asthmatic who requires surgical treatment into the best preoperative condition as quickly as possible, and (5) the desirability of an added margin of safety against the extra stress of surgical treatment for a patient who needs an operation and who has been using steroids for several weeks or months.

The advantage of steroid therapy is that usually it will control the symptoms of asthma effectively and rapidly, whether they are of extrinsic or of intrinsic origin; but there are several disadvantages. Steroids cause atrophy of the adrenal cortex, and use of corticotropin may lead to degenerative changes in the anterior lobe of the pituitary. The asthmatic symptoms often tend to recur within three to four weeks after administration of steroids is stopped. Their prolonged use is dangerous; many undesirable conditions are brought on or aggravated by them and therefore contraindicate their employment. Examples of conditions thus brought on are osteoporosis, diabetes mellitus, and hypertension; those aggravated by steroids include pulmonary tuberculosis and peptic ulcers.

The method of administering steroids varies among competent workers. Some advise continuous use over long periods and speak of the initial clearing dosage and the subsequent maintenance dosage. We prefer the use of short, intensive courses of perhaps 3 to 10 days' duration, with repetition of these at intervals if necessary. The selection of a preparation for use is a matter of individual preference, but it seems likely that, milligram for milligram, prednisone and prednisolone are more effective than other steroids and are less likely to cause changes in the electrolytes of the body.

Comment

The management of asthma remains a problem of many facets. It is not too difficult to outline didactically a program of treatment, but in practice all of us will encounter cases that will tax our therapeutic ingenuity to the limit. Finally, medicines afford only symptomatic relief, and none is good enough to overcome the bad effects of poor environmental control.

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HODGKIN'S DISEASE.—In 1832 Sir Thomas Hodgkin collected and described seven cases of combined lymphadenopathy and splenomegaly. It detracts but little from his observation that some of these cases were later proved to suffer from illnesses other than that which we now call Hodgkin's disease. Wilkes added to the clinical description of the entity in 1865, and memorialized Hodgkin by applying his name to the disease. Greenfield in 1878 provided . . . the initial pathological description which was further developed by Goldman in 1892 and Sternberg in 1898. Dorothy Reed recognized and emphasized the importance of the characteristic giant cells, now named for her, in 1902. The etiology of Hodgkin's disease remains entirely unexplained. Initially various microorganisms including the tubercle bacillus, brucella, diphtheroid organisms, and several mycotic forms were incriminated. However, most workers now feel that these were accidental contaminants. An extensive review of the investigative evidence relating to viruses as possible etiologic agents in Hodgkin's disease has been presented by Bostick. Some authors have emphasized the neoplastic nature of the disease, and have stressed the clinical and histologic relationship between this entity and other lymphatic tumors. In considering this problem it should be remembered that no infectious agent or serological reaction has been consistently identified in this illness, nor has the lesion been reproduced in or transmitted to laboratory animals, although a reticulum cell neoplasm of mice, described by Dunn, bears a considerable morphologic resemblance to Hodgkin's disease.—F. A. Brown and H. S. Kaplan, Hodgkin's Disease: A Revised Clinical Classification and an Approach to the Treatment of Its Localized Form, *Stanford Medical Bulletin,* August, 1957.

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ELECTRIC STIMULATION OF BREATHING IN CHRONIC LUNG DISEASES

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The efficacy of intentionally deep breathing in the treatment of chronic pulmonary disease has been questioned. The method here described employs a portable generator of electrical stimuli. A band-like electrode applied along the costal margin stimulates the peripheral portions of the diaphragm for inspiration; a pair of flat electrodes applied over the two parts of the m. rectus abdominis induces expiration. Intensity and timing can be adjusted. Treatments lasting 10 to 15 minutes were given two or three times a week to 34 patients with pulmonary conditions that were not responding to other therapeutic measures. A group of 13 patients with chronic obstructive pulmonary emphysema proved to be the most difficult to evaluate and had the least satisfactory clinical responses. In the remaining patients (five with empyema, seven with traumatic conditions, and nine recovering from lobectomy) evidence from ventilation measurements, chest roentgenograms, and other criteria showed significant improvement during the weeks of treatment. It is pointed out that a series of comparable untreated patients is difficult, if not impossible, to acquire. The treatment seemed to hasten the resolution of exudates and the mobilization of the diaphragm. The patients accepted it readily and showed no adverse effects.

The prevention of bronchial infection, pulmonary congestion, and atelectasis in postoperative patients, or people otherwise rendered relatively immobile, is often attempted by exhorting the patient to "take a deep breath." Intermittent carbon dioxide inhalation, blowing up balloons, pounding on the chest, frequent postural changes, and a host of other measures have also been employed. The purpose of all such maneuvers is to promote bronchial drainage, to prevent the accumulation of secretions, and to thus maintain a patent airway to the lungs.

Active, forced breathing efforts by the patient have also been employed as a therapeutic measure in chronic empyema and obstructive pulmonary emphysema. In chronic pleural disease the regular use of breathing exercises is said to accelerate the resolution of fibrinous and hemorrhagic exudates within the pleural cavity.[1] Patients with chronic obstructive pulmonary emphysema have been treated with graded breathing exercises in an attempt to improve ventilation by utilizing the abdominal musculature for active participation in the expiratory phase of the breathing cycle.

It is difficult to ascertain whether breathing exercises have any significant value in the various conditions for which they have been advocated. Wide clinical experience is necessary because a series of comparable untreated patients as controls is difficult, if not impossible, to acquire. In any individual case of chronic pleural disease it may not be possible to know whether the use of breathing exercises significantly accelerates the healing process. From their broad experience with 600 patients with empyema, Sellors and Cruickshank [1] believed their exercises to be definitely beneficial. In chronic obstructive emphysema, breathing exercises have been reported as favorable [2] and also as of no benefit.[3] Both points of view are supported by the results of pulmonary function tests.[4] These diverse opinions emphasize the difficulty of evaluating the results of long-term therapy in any chronic disease.

Patients who are debilitated by chronic illness may be unable to exert the necessary physical and mental effort to perform breathing exercises properly. The use of electric muscle stimulation might augment the respiratory effort to produce a maximal contraction of the breathing musculature and thus increase the tidal volume. Becklake and associates [4] used electric stimulation during expiration in conjunction with breathing exercises for the therapy of chronic obstructive emphysema but noted no additive effect. Dr. Hofmann, of Germany, has designed an apparatus which electrically stimulates the respiratory musculature during both inspiration and expiration.[5] It has been used in Europe on patients with asthma, emphysema,[6] bronchitis and silicosis.[7] Increased exercise tolerance, weight gain, and improved vital capacity were reported.[5] The improvement was attributed to better diaphragmatic motion, increased contraction of the accessory muscles of respiration, improved venous return to the heart, and fewer postoperative pulmonary complications.[8] Occasional vital capacity determinations, before and after treatment, were

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performed,[7] but otherwise the results of therapy were not substantiated by laboratory data. In poliomyelitis and cardiovascular diseases, inconstant benefit was noted.[9] This paper reports our experiences with a Hofmann device in a group of patients with various chronic pleural diseases and in another group with chronic obstructive emphysema.

Materials and Methods

The stimulator is a portable machine, weighing approximately 11 kg., which operates from a 110 or 220 volt alternating current source. The machine consists of a power supply, automatic timing circuit which controls the breathing frequency and the relative duration of each phase, various electrodes for application to the chest and abdomen, and a manual switch for emergency cut-off or manual control of the duration of each phase of respiration. In normal operation, the inspiration and expiration circuits are alternately switched on and off automatically. The respiratory frequency can be varied from 6 to 60 per minute and the time ratio of the duration of inspiration and expiration can be adjusted from 1:1 to 1:2. With the manual control, expiration can be prolonged to any desired duration. Current strength is independently variable in each circuit.

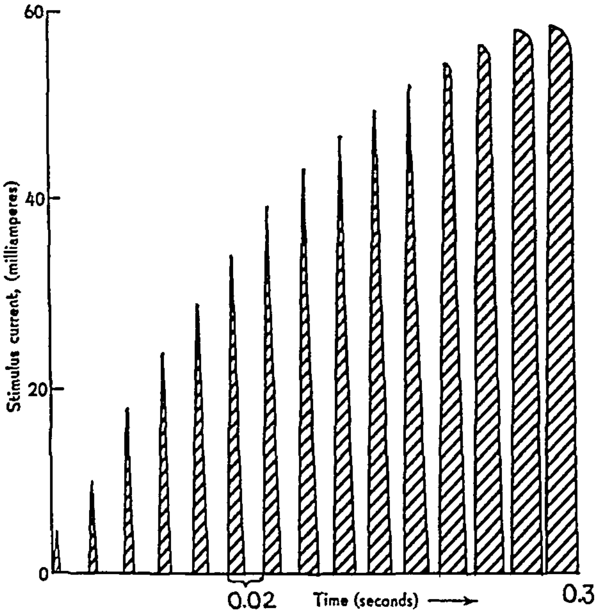

Fig. 1.—Waveform of applied stimulus. Impulses occur every 20 msec. and gradually increase in intensity for 0.3 seconds at which time they reach maximal value for which machine has been set.

The apparatus supplies a series of impulses 20 msec. apart of gradually increasing intensity and duration (fig. 1 and 2). Peak current can be adjusted up to a maximum of 120 ma., which corresponds to a meter reading on the machine of 6 ma. because the inertia of the milliameter is such that it gives an average reading throughout each phase of the respiratory cycle. Voltage depends upon the resistance of the skin and the particular muscle groups being stimulated. The stimuli evoke a painless, gradually increasing, tetanic contraction which can be blocked by curare.

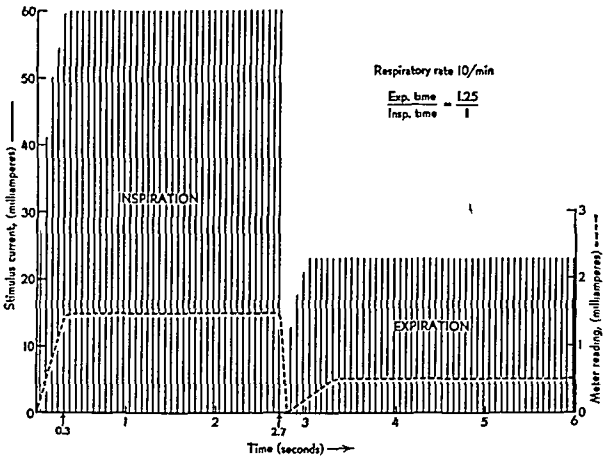

Fig. 2.—Graphic representation of applied stimulus when breathing frequency is set at 10 per minute, inspiratory current at 1.5 ma., expiratory current at 0.5 ma., and ratio of expiratory to inspiratory time is 1.25:1.

The machine is operated in the following manner: Two plate-like electrodes are applied to the abdomen at the level of the umbilicus and a band-like electrode is placed around the lower portion of the thoracic cage. The rectus abdominis muscles are stimulated to contract which augments expiration, and then the peripheral portion of the diaphragm is stimulated to contract which assists inspiration. The pectoralis musculature may be stimulated simultaneously with the rectus abdominis by bilateral application of plate electrodes to the upper thorax. If the arms are relaxed, stimulation of the pectoral musculature causes the shoulders to roll in toward the mid-line and a slight diminution in the size of the upper thorax results. The purpose of the apparatus is to aid the existing respiratory drive. Best results are obtained by initially adjusting the frequency of respiration and the ratio of the duration of the two phases to correspond to those of the patient. After the patient's cooperation has been secured, these parameters can be altered by changing the appropriate controls. With high current intensities (meter readings of 4 to 6 ma.) the patient cannot breathe in opposition to the machine. The number of treatments per patient (2 to 3 per week) varied from a minimum of 9 to a maximum of 116 during a period of from two weeks to nine months. Individual treatments, after a brief familiarization period, lasted approximately 10 to 15 minutes.

The patients in group 4 with chronic obstructive emphysema were the most difficult to evaluate and had the least satisfactory clinical responses. The hospitalized patients were slightly improved and could be discharged but other supportive therapy was administered during the period of hospitalization. The outpatients who came to the laboratory regularly for treatment were not improved, and their severe dyspnea persisted. There was a marked change in the breathing pattern of the patients with emphysema during electrically stimulated breathing. Before treatment, inspiration was rapid and gasping in nature, while expiration was prolonged. With electric stimulation the breathing frequency decreased and the tidal volume increased. With the cessation of electric stimulation, breathing immediately resumed its former rapid, shallow pattern. Figure 3 is retraced from a spirogram of a patient with emphysema during spontaneous and during electrically assisted breathing. If an arbitrary physiological dead space of 200 cc. is assumed for this patient, then the alveolar ventilation during electric stimulation at a frequency of 8 per minute would be 6,400 cc. per minute, whereas during spontaneous breathing at 20 per minute it would be only 4,000 cc. Minute ventilation measured at the mouth would be 8,000 cc. at both breathing frequencies. Some of the patients with emphysema were unable to lie down, and treatment was started while they were in a semirecumbent position. Immediately after the reduction of the respiratory rate and increase in tidal volume (fig. 3), they could lie flat with no discomfort.

The average age of these patients was 59 years. From 6 to 116 treatments over a period of 3 to 39 weeks were administered. No correlation between change in clinical status or ventilatory function and the duration of treatment was apparent. In 10 of the 11 patients on whom satisfactory inspiratory and expiratory roentgenograms of the chest were available, there was some improvement in diaphragmatic excursion as a result of therapy. Sinclair [3b] noted an average increase in diaphragmatic excursion of 3.1 cm. ($p < 0.001$) in 22 patients with emphysema treated with breathing exercises. After further analysis he found that these changes resulted from vertical thoracic motions and that if the measured diaphragmatic excursion was corrected for the vertical shift of the thorax, which frequently occurs during forced breathing, there was no change after breathing exercises. We did not correct our measured diaphragmatic excursions for any vertical chest motion. Improvement in all ventilatory tests was statistically significant but the magnitude of the improvement was small, and in no case did therapy result in a normal maximal breathing capacity. The vital capacity increase (0.49 liters) was primarily the result of an increased inspiratory reserve capacity, so that the elevated end-expiratory lung volume, which is abnormally large in emphysema patients, was increased still further.

Comment

Breathing exercises, as generally performed,[11] emphasize either the expiratory or inspiratory phase of the breathing cycle. In patients with emphysema the function of the abdominal muscles in augmenting expiration is emphasized. The aim is to improve tidal exchange and reduce the functional residual volume. For patients with certain types of localized parenchymal or pleural disease the term breathing exercises implies the regular use of large inspiratory efforts which produce an increase in tidal volume by utilizing some or all of the inspiratory reserve capacity.[12] All types of breathing exercises require the active effort of the patient. He may be unable to exert that effort for a variety of reasons or he may be incapable of understanding what is required of him. If the necessary stimuli to produce an increased tidal volume can be externally applied, he may promptly understand what is expected of him, and we need not depend on his active cooperation.

The Hofmann apparatus alternately stimulates both the inspiratory and expiratory musculature or can be used to stimulate during only one phase of the breathing cycle if one pair of electrodes is disconnected. All the patients reported here were stimulated during both inspiration and expiration. The effect of such dual stimulation is grossly similar to voluntarily increasing the tidal volume by reducing end-expiratory and end-inspiratory volumes. Electric stimulation in this manner differs from breathing exercises in which the emphasis is on the inspiratory or the expiratory phase but not on both.

The value of breathing exercises in patients with chronic empyema was stressed by Sellors and Cruickshank[1] in their exhaustive review of 600 cases. Active inspiration was recommended as the best means of expanding a collapsed lung or lobe. Hayward[11a] claimed great benefit from breathing exercises in both traumatic and inflammatory pleural disease, not only for accelerating the resolution of pleural exudate and hemorrhage but also for correcting the associated deformity of the thoracic cage, which often occurred. Unfortunately, neither of these reports include any pulmonary function data. In chronic obstructive pulmonary emphysema, the value of breathing exercises is less certain. Reports based on clinical impressions are generally favorable.[2a] When pulmonary function tests were done before and after treatment, the effect of breathing exercises was less certain.[4] Filley[2b] thought the results beneficial on the basis of clinical improvement plus a measurable decrease in ventilation for a given work-load on the treadmill. On the other hand Miller,[2c] who likewise considered breathing exercises beneficial in obstructive emphysema patients, attributed the improvement to increased ventilation during exercise. Sinclair [3b] noted "slight but not significant improvement in lung function after a course of breathing exercises." Becklake and associates [3a] noted no benefit from breathing exercises alone, electrically stimulated expiration alone, or a combination of the two.

Although not substantiated by physiological studies, the reports of the value of breathing exercises in pleural disease are uniformly favorable.[13] Our experiences with electric stimulation are similar. The normal healing processes were accelerated, decortication was unnecessary in those cases where it was originally considered, the range of diaphragmatic motion increased on the involved side and frequently on the opposite side as well. The frequent early appearance of a transient pleural friction rub in the postoperative patients coincided with improved diaphragmatic function and the disappearance of pleural exudate. In obstructive emphysema patients, the clinical benefit was meager despite a small, but statistically significant, improvement in maximal breathing capacity and vital capacity.

Despite the limited facilities available for pulmonary function testing of these patients, there was good correlation between the improvement of those functions measured and the clinical results after electric stimulation in the patients with unilateral pleural disease. The adverse influence of unilateral pleural disease upon the function of the opposite lung has previously been demonstrated.[14] Differential lung function was not measured in any of our patients, but improvement in diaphragmatic excursion was often noted in the contralateral hemithorax after treatment. This suggests that electric stimulation helped restore functional capacity by accelerating the resolution of pleural exudate and mobilizing the diaphragm on the affected side, permitting more normal function of both lungs. The large tidal volumes and increased alveolar ventilation which can be produced by electric stimulation suggest other uses for this apparatus. It might successfully combat acute carbon dioxide retention and narcosis and may be useful in other types of respiratory depression.

Summary

An electric device which painlessly stimulates the breathing musculature and augments ventilation was used for a group of patients with various chronic pleural diseases and chronic obstructive emphysema. In patients with unilateral medical and surgical pleural disease there was a prompt decrease in the amount of exudate, rapid return of diaphragmatic function, and decreased morbidity. Chronic obstructive emphysema patients were not significantly improved by electric stimulation despite a small but statistically significant increase in maximal breathing capacity and vital capacity. The clinical results were supported by simple ventilatory measurements and chest roentgenograms.

670 N. Michigan Ave. (14) (Dr. Holmes).

The Hofmann device used in this study was supplied by J. H. Emerson Company, Cambridge, Mass.

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POSTMASTECTOMY DRESSING WITH SUCTION, ATMOSPHERIC PRESSURE, AND BREAST BINDER

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and
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Modification of the postmastectomy dressing routine to include continuous suction, a commercial breast binder, and the avoiding of occlusive pressure dressings for all simple and radical mastectomies has resulted in improved general condition and comfort of patients, with vast improvement in the preservation of viability, and with the healing of the skin flaps. The routine of frequent easy dressing change adds greatly to the comfort of the patient. Patients can be allowed out of bed, with the suction tube clamped for short intervals, as early as desired.

Adequate dressing care of patients who have undergone mastectomy is always a problem, as yet not ideally handled. In ultraradical techniques, flaps are very thin, undermining is extreme, and serosanguinous oozing is a great problem. As a result, the viability of the skin flaps is precarious, resulting often in degrees of circulatory embarrassment varying from simple vesiculation, partial thickness loss, and marginal necrosis to massive loss of flaps requiring secondary grafting procedures. These conditions are encountered not only after radical mastectomy but after extensive simple mastectomy techniques aimed at complete extirpation of mammary tissue. Numerous methods for the prevention of these complications have been devised and include various forms of pressure dressings, flap fixation by quilting or subcutaneous sutures, elaborate drains, or the avoidance of them. Even complete detachment of skin flaps, with reapplication as free grafts, has been recommended.

No method, until recently, has been outstandingly successful in the care and protection of thin skin flaps. Consequently, there has been a strong tendency, for practical reasons, toward the cutting of thicker flaps than those permitted in ideal mastectomy techniques. Difficulties have also been encountered with fairly thick flaps, only shamefully thick and inadequately undermined flaps being regularly immune from the stigmata of delayed healing. It is not the purpose of this paper, however, to discuss controversial issues such as amount of skin resected, thickness of flaps developed, or the pros and cons of routine skin grafting at the time of mastectomy.

It is the usual experience that even ultrathin flaps appear viable at the conclusion of mastectomy, provided that they have not been sutured under tension and that "stay sutures" have not been used in the closure. A "pressure," or occlusive and immobilizing dressing, is then customarily applied, according to the best tenets of plastic surgery. When this is removed five to seven days later, there is often disclosed a miserable condition of the flaps with varying degrees of necrosis due to circulatory embarrassment. Since the interval between the development of the skin flaps and the termination of mastectomy may be two to four hours, and since, after this long interval the flaps usually look healthy, it has seemed to us that, barring accidents or gross technical errors, the occlusive dressings customarily applied may have been partly responsible for these poor results.

In very extensive burns, it has often been apparent that voluminous occlusive dressings, which become so much foul garbage after a few hours, may cause serious damage by maceration, constriction, abrasion, filing, and semiavulsion of surface tissues. It has been instructive to see much of this avoided by open and semi-open treatment of such burns. It occurred to us that, if the advantages of a semi-open type of dressing could be secured for the mastectomy patient, the evil effects of undue pressure upon delicate flaps over bony prominences such as the ribs, costal cartilages, and sternal border would be neutralized and the health of the flaps improved. At the same time it is recognized that skin flaps have to be intimately opposed to a vascular substrate to survive and that the large axillary dead space has to be evacuated of serum, blood, and air.

The fundamentals of suction drainage after mastectomy were first described by Murphey [1] in 1947 and subsequently by Raffl [2] in 1952 and Silvis and associates [3] in 1955. Whereas Murphey employed intermittent suction with a syringe every 12 hours, adjusting the position of the catheter to evacuate serum collections, Raffl and Silvis have used continuous suction but have stressed infrequent dressings. Raffl and Murphey felt that suction was unsuitable where grafts were used. Silvis has used suction in graft cases, with care not to disturb graft take by early dressing. Flaps thus subjected to negative pressure beneath are, in effect, compressed from above by the even diffuse pressure of the atmosphere at about 760 mm. Hg. This salubrious

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effect can be spoiled by adherent or occlusive dressings, which can, by resisting the positive pressure of the atmosphere, actually adhere to and hold portions of flaps away from their bed. A light nonocclusive dressing which can be changed easily, frequently, and painlessly, avoids this and other mechanical hazards to the flaps and provides valuable opportunities for adjustment of the suction tube and aspiration of remote fluid collections.

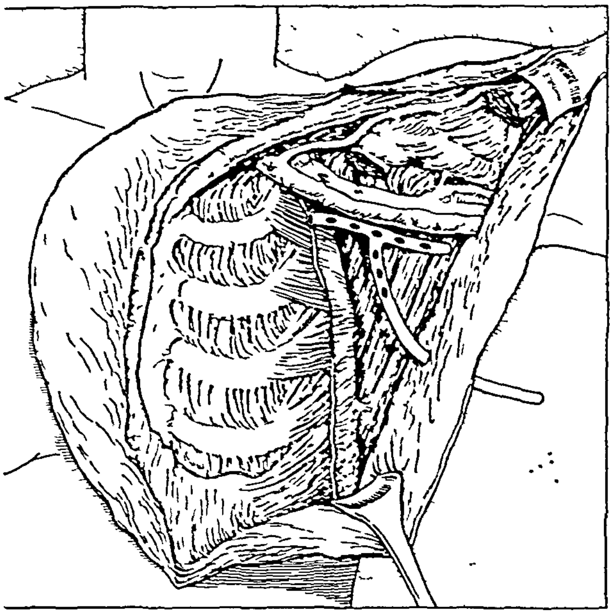

Fig 1.—Position of T-tube in latissimus gutter and beneath axillary vessels

The fixation and "take" of skin grafts on the chest wall in constant respiratory movement is not as easy or as certain as elsewhere It can be greatly facilitated by a "stent" type dressing in which an immobilizing pack is held in place over the graft by the tying of long ends of marginal sutures over the back. This type of dressing fixes and isolates the graft from the remainder of the mastectomy area Continuous suction drainage can then be employed with little or no dressing over the flaps themselves, permitting daily dressing changes, inspection, aspiration, adjustments, and the like with no disturbance to the graft

Method

For the past 10 years, we have been employing exclusively an ultraradical mastectomy patterned after the technique of Haagensen, deliberately excising a wide central area of mammary skin, and resorting to skin grafting to cover the defect. The skin flaps are cut extremely thin with 1 to 3 mm of subcutaneous tissue attached. At the conclusion of the mastectomy, the flaps are gently reapposed to the underlying chest wall, with the surgeon striving always to cover the axillary vessels and brachial plexus *with the superior portions of the flaps.* The margins of the flaps are sutured to the chest wall without the least tension by means of interrupted sutures of fine cotton, the ends of which are left long. The central defect is covered with a thick split-skin graft which is held in place with fine interrupted cotton sutures. No quilting sutures are employed to fix graft or flaps, and no vents are cut in the graft.

Previously, we had employed massive occlusive dressings with sea sponges, or mechanics waste, for graft fixation and compressive obliteration of dead space, with indifferent to poor results. Beginning four years ago, we began to employ routinely a combination of continuous suction, stent fixation of the graft, and very light dressings over all.

A single T-tube of medium size with many accessory openings cut in the transverse arms is inserted through a small stab wound in the lateral flap and adjusted to lie in the gutter along the latissimus dorsi muscle margin and beneath the axillary vessels. The T-tube is sutured to the lateral skin flap to avoid displacement (fig. 1, 2, and 3). Irrigations with saline solution to remove clots and debris are done at once. Complete suction evacuation is carried out, and the flaps and graft are observed to be sucked down flat to the underlying chest wall all around Suction is continued while the rest of the dressing is carried out. A pad is fashioned of scarlet red gauze and mechanics waste and held in place on the graft by tying together over it the long ends of the flap fixation sutures previously described, in the manner of a stent dressing (fig 4). The remainder of the mastectomy area is very lightly and very loosely covered with sterile fluffed gauze.

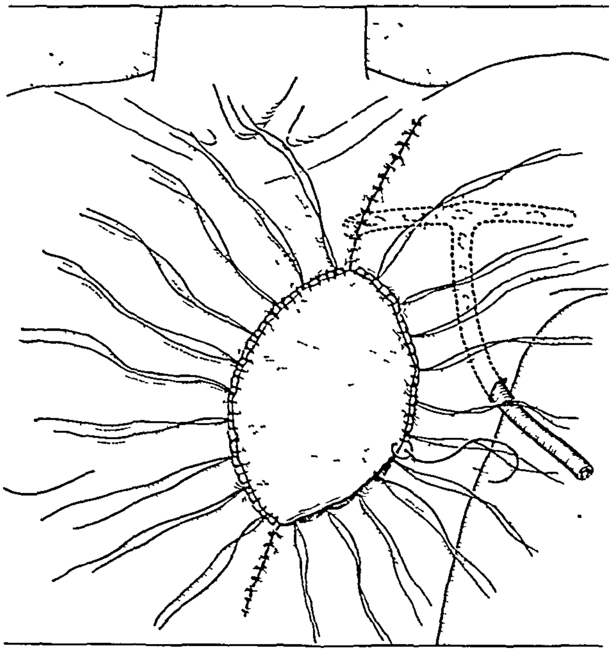

Fig 2 —Flaps sutured without tension to chest wall and graft applied Note long ends of sutures preserved for tying over stent

The patient is lifted from the operating table to a stretcher on which a commercially manufactured breast binder with adjustable straps has been placed. The binder is quickly adjusted so that the nonadherent, nonocclusive dressing is held gently in place. Utmost care is taken to avoid any compression (fig. 5). Difficult, awkward, and shocking manipulations in the dressing technique are thus avoided. The immediate advantages of ease and speed of dressing and avoidance of manipulation of a patient who is potentially in shock at the end of a long arduous operation are strikingly apparent.

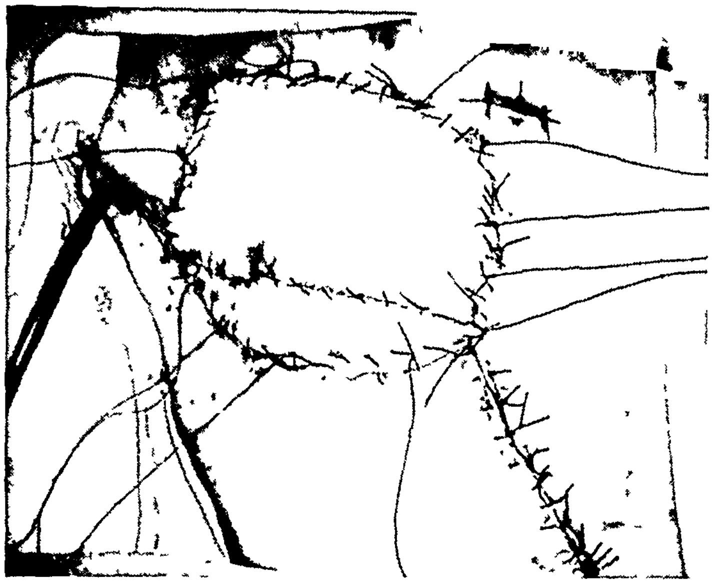

Fig. 3.—Patient at termination of mastectomy. Note healthy appearance of grafts and flaps. T-tube is brought out of axillary limb of incision.

Continuous suction, applied to the T-tube, by use of an electric pump with a regulating device preventing extremes of negative pressure, is begun in the recovery room and maintained during the first three or four postoperative days. Contrary to usual procedures, the loose over-all gauze dressings are changed at least once daily, more often if necessary, to avoid matting and crusting by blood and serum escaping around the T-tube or between sutures. Fluid accumulations, if any, are evacuated by shifting the T-tube and gently "milking" the flaps, or by direct syringe and needle aspiration. The condition of the flaps is noted so that any strangulating sutures can be released. The stent dressing fixing the skin graft is, of course, left undisturbed for five days, when it is changed.

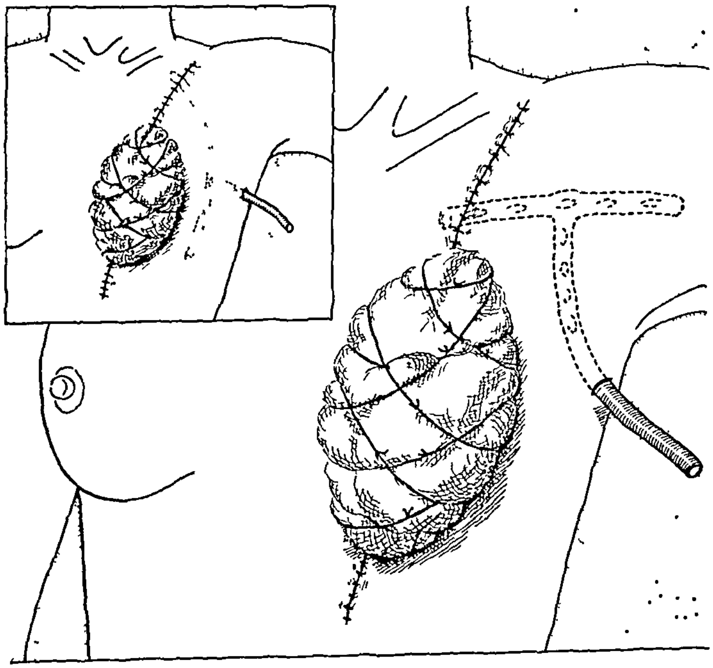

Fig. 4.—Stent applied and tied in place. Insert shows alternate position of T-tube.

This routine of frequent easy dressing change adds greatly to the comfort of the patient. Patients can be allowed out of bed, with the suction tube clamped for short intervals, as early as desired. It would be quite logical to dispense with any dressing of the flaps, save perhaps thin strips of grease gauze over the suture lines and, of course, the stent over the graft, were it not for possible irritation by bed clothes and for the esthetic and psychological benefits of concealment of the mastectomy area from the view of the sensitive patient.

Fig. 5.—Binder in place. Every effort is made to avoid pressure by binder.

Results

Since adopting the above dressing routine for all simple and radical mastectomies, we have been greatly pleased with the improved general condition and comfort of the patients, with the vast improvement in the preservation of viability, and with the healing of the skin flaps. A complete take of the skin graft is usual. Large areas of flap necrosis are no longer seen. Only marginal necrosis of flap edges of minimal extent occurs occasionally. Secondary grafting procedures have not been necessary.

Summary

The technique of mastectomy dressing, with continuous suction and a commercial breast binder, and avoiding occlusive pressure dressings offers advantages in ease of handling, increased patient comfort, and greatly improved protection and preservation of precariously viable thin skin flaps

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The breast binder used in this study is obtainable from the Teval Company, 510 First Ave. N., Minneapolis 3.

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HEXAFLUORODIETHYL ETHER (INDOKLON)—AN INHALANT CONVULSANT

ITS USE IN PSYCHIATRIC TREATMENT

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Seventy-five patients received 288 convulsive therapy treatments. A standard course of 12 treatments spaced at 3 treatments a week was given to all patients receiving some form of convulsive therapy in order to obtain comparative information. The type of convulsive therapy to be administered was determined on a random basis in order to obtain a comparative series. Alternate patients were given either hexafluorodiethyl ether as an inhalant or electroconvulsive therapy. It was repeatedly observed in the majority of patients upon whom the inhalant was employed that in the initial phases of their treatment the anesthetic-like vapor seemed less threatening than the concept of an electric current passing through their brain. It was also observed that as the patients improved they seemed to feel somewhat more apprehensive about the relatively slow onset of the effect of the inhalant in contrast to electric shock. The untoward effects observed appeared to be similar to those frequently encountered after electroconvulsive therapy but symptoms cleared in a very short time. While the mechanism by which the convulsive seizure is brought about is unknown at this time, hexafluorodiethyl ether produced the same results therapeutically as did electroconvulsive therapy.

The introduction in 1935 by von Meduna [1] of the use of artificially induced convulsions to treat schizophrenic reactions initiated much research on the convulsion as a form of therapy. The first agents used by von Meduna [1] were injections of camphor. This was replaced by pentylenetetrazol (Metrazol). Each of these agents had certain disadvantages that led to the search for pharmacoconvulsive agents that were less traumatic psychologically and physically to the patient. Cerletti and Bini [2] had introduced electroconvulsive therapy in 1938. Although pharmacological agents that would elicit a convulsion were introduced from time to time, none could compete with the electroconvulsive technique. Many modifications were developed in the application of electric currents with the aim of diminishing such complications as fractures and transient states of confusion and memory loss. However, according to Kalinowsky and Hoch [3] in their monograph on somatic treatments in psychiatry, "these have added little to the previous work with electroconvulsive therapy." The recent synthesis of the compound hexafluorodiethyl ether (Indoklon), the convulsant action of which was an unexpected observation, indicated the possibility that a pharmacoconvulsive agent was now available with few of the disadvantages of the drugs previously employed.

Pharmacology

The synthesis of hexafluorodiethyl ether stemmed from a series of investigations dealing with the anesthetic action of aliphatic fluorinated ethers of low molecular weight.[4] Hexafluorodiethyl ether ($CF_3CH_2\text{-}O\text{-}CH_2CF_3$) was observed to elicit vio-

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lent convulsions upon inhalation in many species of laboratory animals. This compound is a colorless, mobile liquid which is readily volatile and emits a mild and pleasantly ethereal odor. The boiling point is 63.9 C, and the specific gravity is 1.41 (20/4). The compound is very insoluble in water but soluble in alcohol. The vapor is noninflammable.

White rats exposed to the vapor of hexafluorodiethyl ether in a concentration as low as 30 ppm W/V had violent convulsions within 30 seconds. The convulsions ceased when the agent was removed from the inspired air. Repeated exposures on subsequent days did not appear to produce injury to the animals. Blood studies and histological examination of the lungs, liver, spleen, brain, heart, kidneys, adrenals, and bone marrow revealed no drug-induced toxic effects. When hexafluorodiethyl ether was administered intravenously to dogs in doses of 7 mg. per kilogram, a convulsive syndrome ensued within a minute and prevailed for 10 minutes. The animals recovered and after 24 hours showed no gross ill-effects from the injection. Hexafluorodiethyl ether was no more irritating than ethyl ether on the mucous membrane of the rabbit.[5]

Hexafluorodiethyl ether did not produce hypoglycemia in the rabbit. This agent did not inactivate cholinesterase in vitro, which suggests that the convulsive seizure is not mediated through an excess of acetylcholine. This factor is important in the application of muscle relaxant drugs that are related to acetylcholine. In electroencephalographic studies with dogs and monkeys under thiopental (Pentothal) sodium anesthesia, the inhalation of hexafluorodiethyl ether produced a marked cortical dysrhythmia. The multiple spike and 3-to-4 cps slow wave discharge which first occurs was soon followed by high-voltage multiple spiking similar to that elicited by convulsion following administration of pentylenetetrazol.

Krantz and co-workers[5] suggested that, owing to the apparently harmless nature of repeated exposures to hexafluorodiethyl ether vapor in animals, the rapid onset of the seizures, and the ease of control of depth and duration of the seizures, this compound might be found useful in the treatment of certain types of mentally ill patients. Accordingly, four patients who were suffering depressive reactions for which electroconvulsive therapy was indicated were each subjected to one treatment with hexafluorodiethyl ether administered by inhalation from a common plastic nasal inhaler. These four patients showed no untoward reaction to this one exposure.[5a] As a result of these clinical trials, we decided to conduct a full-scale clinical investigation with hexafluorodiethyl ether.

Method

Selection of Patients.—The patients were selected for convulsive treatment by the patients' hospital physicians. The type of convulsive therapy to be administered was determined on a random basis in order to obtain a comparative series. Alternate patients were given either hexafluorodiethyl ether or electroconvulsive therapy. The patients selected for either treatment were those recently admitted to the hospital with a mental disorder in which a severe depression was the outstanding characteristic. Patients were also selected with acute or chronic schizophrenic reactions who had previously been subjected to a variety of treatment procedures with no improvement. These patients had become management problems, and convulsive therapy was indicated for a symptomatic improvement. All drug therapy was discontinued at least three days prior to treatment.

Laboratory Data.—Preparatory to the administration of hexafluorodiethyl ether, routine blood studies, including cephalin-flocculation and thymol-turbidity tests for liver function, were done. Routine urine examinations were conducted. These were carried out at weekly intervals during the course of therapy. In addition, a series of serial electrocardiograms were carried out on most of these patients before, during, and after each treatment. Routine x-ray studies of the chest were obtained on all patients prior to treatment. Electroencephalograms were obtained before and after treatment on many of these patients. Also, a series of psychological studies consisting of the Wechsler memory scale, forms 1 and 2, and the Graham Kendall test were administered prior to, immediately after, and three weeks after treatment to determine the degree of intellectual impairment resulting from the treatment. In addition, Lorr scale ratings (multiple scale for rating psychiatric patients) were obtained at the same intervals to obtain quantitative measures of changes in the symptomatic manifestations of the patients' mental disturbance.

Treatment Procedures.—A standard course of 12 treatments spaced at 3 treatments a week was given to all patients receiving some form of convulsive therapy in order to obtain comparative information. Occasionally there were patients in whom for various reasons therapy was stopped prior to this number of treatments, and there were also patients who received additional treatments.

While the treatment procedure was being carried out, and for several weeks after the termination of the treatment, the patients were interviewed at frequent intervals so that their subjective impressions of this treatment and an objective evaluation of their responses could be obtained. Many of these patients had received previous courses of electroconvulsive therapy and were able to offer comparisons. However, the final evaluation of the patients' reaction to the treatment procedure was determined on the basis of the ward physicians' opinion.

Technique for Administration of Inhalant Convulsant.—The patients were prepared for hexafluorodiethyl ether therapy by a procedure similar to that followed for electroconvulsive therapy. After fasting, patients were given 0.6 mg. of atropine sulfate parenterally prior to treatment. In the first clinical trials inhalers similar to those used for the common nasal decongestant, with amounts of up to 6 cc. of the drug, were used. When these plastic inhalers were used they were merely inserted into one nostril and the other closed. The patients were not anesthetized. Later, a double-barreled plastic inhaler was used for both nostrils. However, this method was not satisfactory because of the difficulty in holding the inhaler manually and at the same time keeping the patient's mouth closed. There was also the added factor of pressure to the nostrils since the inhaler had to be held quite firmly. To obviate this awkwardness, a Stephenson mask modified appropriately with an activated charcoal exhalant adsorber was used (see figure). Originally there was fear that the leakage of the vapor might affect the personnel giving the treatment, but with a well-ventilated room there were no untoward reactions in these personnel.

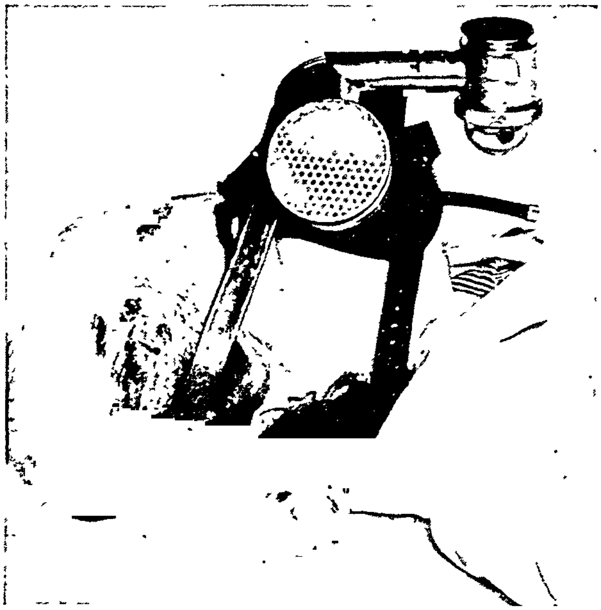
The mask is close-fitting with a one-way flow with the drug dispersed in a measured amount over absorbent gauze contained in a plastic reservoir with air inlets. This is fastened into the inlet valve of the mask. The patient inhales a mixture of vapor and air. The expired vapor is forced through another one-way valve into a carbon adsorbent.

The patient breathes oxygen for about 30 seconds, a rubber mouth gag is inserted, the mask is strapped on, and the hexafluorodiethyl ether reservoir is shunted into the path of the respired air. (It was our impression that some preliminary breathing of oxygen by the patient seemed to bring about a smoother course.) The drug vapor is then turned on.

With experience it was found that, after the initial loading of the reservoir with the gauze saturated with approximately 1.5 cc. of hexafluorodiethyl ether, each subsequent treatment or convulsion could be achieved by resaturating with approximately 0.5 cc. of hexafluorodiethyl ether. Further developments in this technique are in progress to provide a multiple treatment reservoir which may ultimately be disposed of without necessitating the refilling procedure.

The onset of the convulsion could be accelerated or delayed by regulating the amount of air entering the system via the bypass air inlet valve. Experiences indicated that an induction period of up to 20 seconds is optimal. Longer periods created anxiety in the patients as they awaited the onset of unconsciousness evoked by the inhalation of the drug.

Convulsive Pattern.—As each patient was treated, the convulsive pattern was studied according to the following plan. The onset and the course of the subsequent phases, namely, the myoclonic, tonic, and clonic phases, the onset of respiration, and the total time for recovery, were timed. The onset of the convulsion was measured from the time of insertion of the reservoir containing the drug in the mask to the first observable myoclonic jerks which invariably preceded the onset of the tonic spasm. As the amount of drug placed into the reservoir decreased, there was a gradual lengthening of the period of onset.


Modified Stephenson mask in place on patient.

The onset of the convulsion was preceded by unconsciousness. The seizure was initiated by a series of myoclonic movements lasting on the average about two to five seconds. This phase of activity may prevent the sudden muscular contractions and "jackknifing" which are thought by many to produce the fractures associated with convulsive therapy. It appears that this type of onset more closely approaches that of the epileptic, who seldom develops fractures.

The tonic phase was measured from the end of the myoclonic jerks to a point at which the force of the clonic movements seems to overcome the force exerted by the extensor muscles in tonus. The end of this period usually occurs just prior to the termination of the opisthotonic arching of the back. This period usually lasts from 15 to 30 seconds. The clonic phase was measured from the end of the tonic phase to the end of the clonic movements. The duration of this period ranged from 15 to 35 seconds.

The respiratory recovery was measured from its onset in relation to the termination of the clonic phase. The time of respiratory recovery was between 15 seconds before and 5 seconds after the termination of the clonic phase. In most cases the onset of respiration occurred before the termination of the clonic phase.

The period of total recovery was measured from the time of the insertion of the reservoir containing the drug to the point at which the patient responded by opening his eyes when called. This period ranged from 2 to 15 minutes. Occasionally there were patients who exhibited myoclonic activity after the termination of the initial convulsion. Rarely, there was a transient second convulsion after the termination of the first. This is attributed to excessive medication with hexafluorodiethyl ether. There were two such episodes in a total of 288 treatments.

Results in Twenty-five Patients Treated with Hexafluorodiethyl Ether (Indoklon)

Case No	Sex	Age, Yr	Diagnosis	Duration Present Hospitalization	Previous Hospitalization	Reasons for Convulsive Therapy	No of Treatments	Results*
1	F	32	Schizophrenic reaction, chronic, paranoid, and catatonic features	2 yr	No	Increasingly disturbed, excited, agitated, assaultive destructive; required seclusion; failed to respond to other therapies	9	+
						Repeated catatonic like excitement at time of menstruation†	2	+
2	F	32	Schizophrenic reaction, chronic, catatonic, paranoid, and hebephrenic features	3 yr	No	Regression to isolative, withdrawn, hallucinated, incoherent state with failure to maintain sustained improvement with other therapies tried	15	+
						Regression to withdrawn, seclusive state with refusal to eat†	2	+
3	F	45	Psychotic depression	9 mo	Yes	Increasing depression with suicidal *preoccupations*, marked feeling of unworthiness, periods of agitation and confusion	10	+++
4	F	29	Schizophrenic reaction, catatonic type	2 mo	Yes	Marked restlessness, agitation, confusion· overactive and excited; required seclusion	12	+++
5	F	32	Schizophrenic reaction, chronic, catatonic type	2 mo	Yes	Preoccupied, withdrawn, ritualistic, hallucinated, was becoming a feeding problem	12	+++
6	F	32	Psychotic depressive reaction	2 mo.	No	Numerous physical complaints, crying spells, increasing depression, increasing agitation; inability to take care of self	6	+++
7	M	35	Schizophrenic reaction, chronic paranoid type, associated with episode of catatonic stupor	1 yr.	Yes	Mute, confused, disoriented, delusional, and in catatonic stupor	12	++
8	M	27	Schizophrenic reaction, paranoid type, with depressive features	2 mo	No	Delusional, hallucinating, paranoid, panicky, agitated; episodes of crying and screaming	17	+
9	M	24	Schizophrenic reaction, catatonic type	1 yr.	Yes	Mute, hallucinated, negativistic, restless	12	+++
10	M	53	Involutional psychotic reaction	2 mo	Yes	Depression, hypochondriasis, insomnia, inability to take care of self	12	0
11	F	46	Depressive reaction (lobotomized 1949)	9 mo	Yes	Depressed, tense, unable to work	12	+++
12	M	26	Schizophrenic reaction, catatonic type	2 mo	Yes	Mute, negativistic, agitated; demonstrated autistic thinking and confusion, unable to take care of self	12	+++
13	F	47	Involutional psychotic reaction	5 mo	Yes	Markedly depressed, delusional, intense anxiety and preoccupation	10	++
14	M	34	Schizophrenic reaction with paranoid and catatonic features	1 yr	Yes	Depressed, hallucinated, withdrawn, seclusive, confused	12	+
15	F	46	Involutional psychotic reaction	2 mo	No	Suicidal tendencies, depressed, not eating, hypochondriacal	12	+
16	F	46	Psychotic depressive reaction	1 yr	No	Depression	8	+
17	F	32	Psychotic depressive reaction	1 yr.	Yes	Delusional, bizarre ideation with destructive thoughts, leading to fearfulness and depression	25	+
18	F	49	Chronic, undifferentiated schizophrenic reaction	3 mo	Yes	Depressed, confused, hallucinated, delusional, not eating; considered suicidal	12	+
19	F	44	Schizophrenic reaction, paranoid	3 mo	Yes	Demonstrating autistic behavior, hallucinated, confused, destructive, suicidal	12	++
20	F	37	Schizophrenic reaction, chronic, paranoid	3 mo	Yes	Tense, apprehensive, depressed, neglectful of self, delusional, considered suicidal	9	+++
21	M	34	Schizophrenic reaction, chronic, paranoid	3 mo	Yes	Confused, preoccupied, hallucinated, delusional	9	+++
22	F	26	Acute schizophrenic reaction with paranoid features	3 mo	No	Hallucinated, delusional, confused, agitated, suicidal	12	+
23	F	32	Schizophrenic reaction, chronic, undifferentiated type	2 mo	No	Delusional, hallucinated, confused, agitated combative, inappropriate affect, overactive, demonstrated unpredictable impulsive behavior	12	++
24	F	35	Schizophrenic reaction, paranoid	1 mo	Yes	Delusional, hallucinated, inappropriate affect, impulsive acting out	10	++
25	F	65	Schizophrenic reaction, schizoaffective type	1 mo	Yes	Depressed, confused, phobic; had increasing agitation and feelings of unreality	12	+

* +++ = recovery, ++ = great improvement, + = improvement, 0 = no change, and W = worse † Second course, three months later

Results of Treatment.—As shown in the table, the results of treatment were recorded as recovery, great improvement, improvement, no change, and worse. Recovery was defined as indicating social recovery, with the patient ready to take his place in society again, complete loss of hallucinations and delusions, return of affect, and disappearance of abnormal behavior. Great improvement signified one or more of the following three changes· (*a*) loss of hallucinations, (*b*) marked improvement in interpersonal relationships, and (*c*) marked improvement in affect. Such patients were given increased hospital liberty and transferred to convalescent wards. Improvement included all the criteria for great improvement except that these improvements were temporary (effect of treatment lasted one month or less). No change referred to only transient improvement during the period of treatment, with the patient at the end of treatment considered to have shown no change from his original symptoms. Worse indicated that the state of regression or disturbed state seemed to be further intensified by the treatment procedure.

Clinical Experiences

The unusual properties of this volatile inhalant, hexafluorodiethyl ether, namely, its evoking unconsciousness and convulsant actions without apparent residual toxic effects, appeared to be admirably suited for convulsive therapy. Especially significant were its gradual onset of action and its automatic self-regulating mechanism. This occurred as its concentration reached the convulsive threshold, with the patient involuntarily ceasing to breathe with the onset of the tonic phase, thus preventing the possibility of overdosage.

It was repeatedly observed in the great majority of patients that in the initial phases of their treatment the anesthetic-like vapor seemed less threatening to the patients than the concept of an electric current passing through their brain. It was also observed that as the patients improved they seemed to feel somewhat more uncomfortable about the relatively slow onset of the effect of the inhalant in contrast to electric shock. However, at the termination of their treatments, when questioned as to which they preferred, the majority favored the "gas." The initial sampling of the results of this form of convulsive therapy in this preliminary study consisted of 25 patients who received a total of 288 treatments. The results are indicated in the table.

From a study of the table it will be observed that 9 patients (cases 3, 4, 5, 6, 9, 11, 12, 20, and 21) out of these 25 had a sufficient degree of improvement to be released from the hospital, having made a good social recovery within one to eight weeks after the termination of the hexafluorodiethyl ether treatments. The following abstracts of cases 3, 4, 5, and 11 were selected as representative examples of this group of responses.

Report of Cases

Case 3 (psychotic depression).—A 40-year-old married female was admitted in July, 1956, because of agitation, confusion, periods of disturbed behavior, depression associated with feelings of self-depreciation and unworthiness, and an inability to work or look after her family. Her history indicated the onset of her depression a year previously, after the birth of her third child. She was hospitalized, receiving a course of 30 electroconvulsive treatments, with some improvement. Several months later she became depressed again, and after her hospitalization, despite supportive treatment, her status remained unchanged. In December, 1956, the patient was placed on a course of hexafluorodiethyl ether therapy, receiving a total of 11 treatments. She responded well, her depression lifting after the third treatment. In February, she was described as making an excellent ward adjustment, working in the hospital beauty shop, socializing with other patients, and writing letters.

When the patient was questioned about her treatments after their completion, she stated she was more frightened toward the end of the "gas" treatments because they were not as instantaneous as electric shock. She also had a feeling of not being able to breathe before she lost consciousness. However, when she was confronted with the issue of making a decision as to what kind of treatment she would prefer if she had to receive treatment again, after some thought, because of her aversion toward having either type of treatment, she felt that she would take the gas because "it was less damaging to her brain than electricity." In April, 1957, the patient was released from the hospital, and she is being seen in the outpatient clinic for psychotherapy. She continues to do well.

Case 4 (schizophrenic reaction, acute catatonic excitement).—A 29-year-old married female was admitted January, 1957, in a state of acute excitement. She was disoriented, agitated, restless, emotionally labile, manneristic, ritualistic, and at times very fearful. The history revealed the patient to have had exactly the same symptoms one year previous when she was admitted for the first time to this hospital. At that time she received 15 electroconvulsive treatments. After the third treatment she began to improve, and she was subsequently discharged.

In February, 1957, the patient was started on hexafluorodiethyl ether therapy, receiving 12 treatments. After her third treatment she began to display signs of improvement. She was rational, cooperative, well-oriented, cheerful, and pleasant, and she participated in ward activities.

When the patient was asked to compare experiences with both forms of convulsive therapy she revealed that she preferred the hexafluorodiethyl ether to electroconvulsive therapy but found the ethereal odor somewhat objectionable. She said that after electroconvulsive therapy she felt as if her "head was fried for two hours." She also remembered having severe headaches after the electroconvulsive therapy. Within 10 minutes after her recovery from the hexafluorodiethyl ether treatment and on her return to the ward, she could begin her routine activities. At no time was there any complaint of confusion and memory loss. She was discharged in March, 1957.

Case 5 (schizophrenic reaction, paranoid type, chronic).—A 31-year-old female, married but separated, was admitted in January, 1957. At this time she manifested auditory and visual hallucinations, posturing and ritualistic movements, flattened affect, and fragmented thinking; she was incapable of self-care and was not eating. Her history revealed a previous admission to the Spring Grove State Hospital in May, 1955, with a similar diagnosis. At that time no active therapy was undertaken because of uncertainty concerning possible pulmonary tuberculosis. Diagnostic studies were negative. She was placed on reserpine therapy for several weeks, and there was a gradual remission of her symptoms. The patient was released in August, 1955.

During her present admission she received 12 hexafluorodiethyl ether treatments, making a gradual recovery. Her feelings about these treatments were: "I remember smelling and that's all. I can't say anything against them—I'm not afraid of them." There were no complaints made referable to memory or feelings of confusion. She was released from the hospital in March, 1957. She was seen several weeks later in an interview and was doing well.

Case 11 (depressive reaction, with previous lobotomy).—A 46-year-old female, married but separated, was admitted in July, 1956. She complained of being depressed and unable to enjoy life and of a squeezing sensation in her throat, with an inability to function and look after herself. The history revealed that the patient had a supraorbital lobotomy in 1949 for a similar complaint, without any feeling of relief. A few months prior to the present admission, because of her dysphoric feelings, the patient had a series of 12 electroconvulsive treatments, with no improvement. During the months of her present hospitalization the patient appeared to be a masochistic, frustrated individual, who had great feelings of inadequacy. Despite the fact that the patient was being treated with chlorpromazine, she still complained at times of very strong suicidal tendencies, making only a marginal adjustment to hospital routines. She was seen in individual psychotherapy for several months, and various medicaments and combinations were tried in an attempt to relieve her persistent depression, but she continued to remain tense and depressed. In March, 1957, she received a total of 12 hexafluorodiethyl ether treatments, with a marked alleviation of her depression. In fact, the patient behaved in a rather irresponsible, euphoric manner. Gradually this behavior subsided, and the patient maintained her improvement.

In discussing her feelings about the hexafluorodiethyl ether treatments she stated, "These treatments are less disturbing than the regular electric shock treatments. It doesn't disturb my mind the way the others did. It doesn't affect my memory as much." She did not feel as confused with the gas treatments as she had felt with the electric shock. Near the end of her treatments she expressed a feeling that the electric shock treatments were not as hard on her as the gas because the electric shock put her out faster. When confronted with a choice, she could not make a decision in favor of either one. In May, 1957, she felt well enough to request leaving the hospital and was discharged.

There were five patients (cases 7, 13, 19, 23, and 24) who displayed a great deal of improvement but were not considered well enough to leave the hospital. Clinical examples of such cases are indicated in the following abstracts of the patients in cases 7 and 13.

Case 7 (*schizophrenic reaction, chronic, paranoid type*).—A 34-year-old married male was admitted in December, 1956, in a state of catatonic stupor. He expressed ideas of persecution and of being "framed" by friends, had bizarre concepts about himself such as that he had two heads, became emotional, with crying and reading of the Bible, and, finally, precipitated his hospitalization by drinking rubbing alcohol in a suicide attempt. His history indicated that he was well until July, 1955, when he began to talk "nonsense" loudly to his wife and became frightened on the street. Over the months he became progressively more suspicious of people and accused his wife of infidelity, demanding to know her whereabouts at all times; he became unable to hold a job, and took to sitting and brooding at home. He accused his 12-year-old daughter and wife of trying to "poison his coffee" and "dope his cigarettes."

The patient was given 12 hexafluorodiethyl ether treatments in March, 1957. His state of catatonic stupor and intense preoccupation was resolved. However, at times, he would be observed talking to himself and cleaning the ward in a very obsessive manner. He still appeared to be confused at times and was somewhat inhibited in his ability to communicate, but he had a fair contact with reality, had improved sufficiently to obtain ground privileges, and was working in the occupational therapy section.

Concerning his thoughts about his treatment, he attributed his improvement to the treatments which he was receiving. When questioned as to what they were, he replied that he was being given gas and "gas is doing something to the weed-killing stuff in me." He continued in this autistic manner, stating "it is given to me by a man in the apartment—gave it to me in a cup of coffee" (laughed) "it kind of takes my breath away but it doesn't scare me." The patient remains in the hospital at present and is maintaining a good adjustment.

Case 13 (*involutional psychotic reaction*).—A 46-year-old widowed female was admitted in January, 1957, because of increasing depression, paranoid delusions, and sexual preoccupations that were delusional in character. Her history revealed that the patient was hospitalized in 1955 and treated with electroconvulsive therapy and psychotherapy.

She was given 10 hexafluorodiethyl ether treatments in March, 1957, with a resolution of her paranoid trends, but she still remained somewhat depressed, suspicious, and confused. In May, 1957, she continued to improve, was going home occasionally for a week end, and was making a good hospital adjustment. She was more cheerful and active and described herself as feeling better and more relaxed. When questioned concerning her treatments, she replied, "I breathe and go to sleep—I do not know what happens. I feel that I did not like it at first and still don't like the effects of its putting me to sleep—the rushing of things all together as I breathe it. I have a funny feeling in my head. It all goes together and then just quits—that's the end of it." She could not remember previous experiences with electroconvulsive therapy. She was not frightened of the present treatments but felt she might have been of the electroconvulsive therapy, which, however, she could not remember too well. The patient remains in the hospital at the time of writing.

There were 10 patients (cases 1, 2, 8, 14, 15, 16, 17, 18, 22, and 25) who displayed only a transient improvement and relapsed after treatment stopped. Two samples of such cases follow.

Case 1 (*schizophrenic reaction, chronic, paranoid, and catatonic features*).—A 33-year-old married female was admitted to this hospital 15 months prior to the time of writing. On admission she was disturbed, excited, agitated, assaultive, and destructive, requiring seclusion, and was a difficult management problem. Her history revealed no record of previous difficulties until she was admitted to this hospital three weeks after the birth of her first child. At that time she had become depressed, hallucinated (auditory), extremely suspicious, had had persecutory ideation, and had engaged in fragmented thinking and irrational behavior. During her course in the hospital she was first treated with chlorpromazine with no particular results. She was then given a course of electroconvulsive therapy with only transient improvement. She was then treated with reserpine with no apparent effect. Subsequently she received 50 treatments of insulin coma. This was later combined with electroconvulsive therapy, but after her 50th shock treatment the patient developed compression fractures of the fifth, sixth, and seventh thoracic vertebrae, and the electroconvulsive therapy was discontinued. There appeared to be no particular response to this treatment, and the patient ran a fluctuating course in which she would become disturbed, requiring seclusion and cold wet packs. At one point she was placed on a trial of estrogen therapy for a period of three months because it was noted that the patient became extremely disturbed for three days to a week after the onset of her menstruation. This therapy was discontinued because the patient showed no improvement.

In the 15th month of her hospitalization she was given a course of hexafluorodiethyl ether therapy, receiving a total of nine treatments. She displayed marked improvement, but it lasted only a few weeks. During this period of improvement she participated in ward activities, was accessible, expressed desires to go home, and seemed more relaxed and comfortable. The patient stated that she preferred this treatment (hexafluorodiethyl ether) to electroconvulsive therapy, which she dreaded. She felt that she did not have as much confusion or trouble with her memory as she had had with electroconvulsive therapy.

Three months after her course of treatment there again occurred regression, and, with the onset of her menstrual period, she had an episode of catatonic-like excitement. She was given another course of hexafluorodiethyl ether consisting of two treatments, and had a prompt but transient improvement. At the time of writing she remains in the hospital and is receiving large doses of an ataractic drug (Chlorpromazine) that is having a moderate effect.

Case 2 (schizophrenic reaction, chronic, catatonic, paranoid, and hebephrenic features).—A 32-year-old married female with four children has been hospitalized continuously at this hospital for 38 months prior to the time of writing. Just prior to the present treatment with hexafluorodiethyl ether she was isolative, withdrawn, apathetic, and hallucinating, with incoherent verbal productions. She was being considered for another trial with electroconvulsive treatment when this experimental treatment was proposed. The history revealed that after a miscarriage in June, 1953, she was admitted to this hospital because she became depressed, withdrawn, suspicious, developed ideas of persecution, and had auditory and visual hallucinations. During her three years of hospitalization she has had repeated courses of electroconvulsive therapy, with very little improvement. In August, 1954, she had a complete course of deep-coma insulin treatments without noticeable effect. For a brief time in the early part of 1955 she showed a slight improvement, then regressed. A subsequent course of chlorpromazine and azacyclonol (Frenquel) hydrochloride was without appreciable effect.

In December, 1956, she was started on hexafluorodiethyl ether therapy, receiving 15 treatments. While this patient displayed a great deal of anxiety when exposed to any type of treatment, she cooperated readily. Her hospital physician, who administered her previous courses of electroconvulsive therapy, seemed to feel that she had a more comfortable experience with hexafluorodiethyl ether. During her period of transient improvement she began to socialize with other patients, became interested in her appearance, and helped with the ward work. Her conversations became normal. She slept well, and her appetite was better. However, as treatment continued, she seemed to reach a plateau and showed no further improvement.

When interviewed concerning her "gas" treatments she stated that she was not as much afraid of them as of electric shock treatments. However, as her treatments continued, she became increasingly resistant to them. Two months after the termination of her treatments she again regressed; became seclusive, withdrawn, and preoccupied, stopped eating, and became a management problem. She was given a course of two hexafluorodiethyl ether treatments with a marked but transient improvement. She remains in the hospital at time of writing.

There was only one patient (case 10) who displayed no change during treatment. There were apparently no cases that were worsened by this treatment. Case 10 (below) was that of a patient with an involutional psychotic reaction. It was an interesting observation in this study that there were only three cases classified as involutional psychotic reactions, and in each case such patients had received intensive treatment before coming to this hospital. They had not responded to treatment, and, upon exposure to another course of treatment, there were none who showed sufficient recovery to be discharged from the hospital within the six-month period of this study.

Case 10 (involutional psychotic reaction).—A 53-year-old married male was admitted in January, 1957, because of depression and somatic complaints. His history indicated that he had been hospitalized a few months previously, receiving a series of electroconvulsive treatments for a similar reaction. The patient received a course of 12 hexafluorodiethyl ether treatments in March, 1957. At times he seemed to show some improvement in that his hypochondriacal preoccupations were not as intense. He slept better and associated freely with the other patients. However, this improvement only persisted for a brief interval after one treatment. As treatment progressed he expressed increasing anxiety and seemed confused. By the end of treatment little difference could be seen from his state prior to the onset of treatment. He has remained in the hospital, and is making a marginal adjustment. The patient could not express any clear feelings about his treatment and was under the impression that he was getting electric shock treatments.

In this initial study there appeared to be no evidence of any toxicity developing, as indicated by routine blood and urine studies. Liver-function studies (thymol-turbidity and cephalin-flocculation tests) showed no significant change. The electrocardiograms were essentially unchanged. The question of what might occur if hexafluorodiethyl ether is combined with the administration of such drugs as succinylcholine chloride and thiopental (Pentothal) sodium as yet remains to be determined. The few initial electroencephalographic studies that were available, of the patients before and after treatment, seemed to indicate that the high-voltage slow waves did not persist to the degree which is usually seen after electroconvulsive therapy.

The untoward effects observed appeared to be similar to those frequently encountered after electroconvulsive therapy. Some of the patients complained of one or more symptoms such as occasional headache, nausea, and dizziness, which occurred immediately after convulsion. These symptoms cleared in a very short time. Postictal confusion, amnesia, and psychomotor activity appeared to be less than with electroconvulsive therapy. There was one vertebral compression fracture in 288 treatments. The patient complained of severe backache, and x-ray examination indicated a fracture in the thoracic vertebrae.

As some patients who had received courses of electroconvulsive therapy in the past progressed through their treatment, they appeared to develop some anxiety that was related to the delay of onset in contrast to the immediate action of electroconvulsive therapy. These delays resulted often, due to the experimentation that was being conducted in the regulation of the air and vapor mixture. Convulsions could not be elicited in less than 10 seconds.

The physicians giving the treatments admitted the advantage of the immediate action of electroconvulsive therapy, but felt that this was more than compensated for by the convulsant inhalant for the following reasons. First, the onset of the convulsion was gradual, without the "jackknifing" effect that is frequently seen at the onset of electroconvulsive therapy and that is suspected of producing many of the compression fractures occurring in such therapy. Secondly, the period of apnea appeared shorter, and there appeared to be less cyanosis occurring. Subjectively, the majority of the patients seemed less fearful of this form of treatment in contrast to electroconvulsive therapy, despite the anxiety occasioned by the delayed onset.

No attempt was made to obtain percentage evaluations relating to the degree of response of the patients in the different diagnostic categories, since we felt that the sample was too small. We observed, however, that, in a comparable group of 25 patients who were receiving electroconvulsive therapy during the period of this initial study, 9 of the patients receiving hexafluorodiethyl ether and only 5 of those receiving electroshock therapy had been released from the hospital. Whether this trend is significant will be seen when this study is extended.

Comment

The mechanism by which the convulsive seizure is brought about is unknown at this time. Studies are being conducted comparing a series of patients receiving hexafluorodiethyl ether with those receiving electroconvulsive therapy. These studies are being evaluated on the basis of the patient's clinical response and complications. Psychological studies are being conducted for comparative evaluation of intellectual impairment following the two types of treatment and of their effect on memory function. Electroencephalographic and electrocardiographic studies and transaminase determinations are also being obtained on a comparative basis. Another area in which studies are planned is that of the relationship between hexafluorodiethyl ether and such muscle relaxants as succinylcholine. The use of tranquilizing drugs with this treatment procedure is also an area requiring investigation. The alternate use of hexafluorodiethyl ether and electroconvulsive therapy offers interesting possibilities. If a patient develops increasing resistance to one form of therapy he may be changed to the other. The question whether this alternation will bring about an increased therapeutic effect compared to the use of either one alone is being further explored.

Summary

Hexafluorodiethyl ether (Indoklon), administered to 25 hospitalized psychiatric patients requiring convulsive therapy, never failed to produce a convulsive seizure. It produced the same results therapeutically as electroconvulsive therapy with apparently less apprehension and less postconvulsive confusion on the part of the patients. A three-month follow-up of this group of 25 patients compared favorably to that of a similar group of patients receiving electroconvulsive therapy.

Addendum

Since submitting this manuscript we have administered more than 1,000 treatments with hexafluorodiethyl ether to about 80 patients. Our general impressions have remained unchanged.

29 S. Greene St. (1) (Dr. Krantz).

The hexafluorodiethyl ether used in this study was supplied as Indoklon by the Ohio Chemical & Surgical Equipment Company, Madison, Wis.

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ACUTE APPENDICITIS.—In a recent analysis of the deaths from acute appendicitis in Philadelphia from 1944 to 1953 inclusive, the mortality was reduced from 1 per cent to less than 0.5 per cent. The appendix had ruptured in 67 per cent of the fatal cases. In this study peritonitis was the cause of 56 per cent of the deaths. It was of interest that this figure was about the same for each of the ten years studied and was not lowered in the most recent years even though antibiotics were widely used. The mortality is greatest in patients over 50 years of age or in children under ten years of age. In the older patients, concomitant diseases oftentimes were an important factor in the death; in childhood, disturbances in the electrolyte balance and dehydration were of great significance.—F. A. Bothe, M.D., Appendectomy, *The Surgical Clinics of North America*, December, 1957.

EPIDEMIC DIARRHEA IN PREMATURE AND OLDER INFANTS CAUSED BY ECHO VIRUS TYPE 18

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Two related outbreaks of diarrhea among infants from whom it was possible to isolate a virus clearly responsible for the illness represent the first proved instances of such etiology. Clinically, the disease was not severe. The diarrhea persisted from one to five days, with a mean duration of three days. The illness was treated by a reduction in caloric content of feedings, supplemented by the parenteral administration of water and electrolytes whenever indicated. After subsidence of the diarrhea, the babies were gradually returned to their normal formulas, without recurrence of disease.

Despite the ubiquity of diarrheal disease in clinical practice, failure to identify a specific bacterial or parasitic cause is the usual happening. Even in those underdeveloped areas in the world where bacterial diarrheas are highly endemic, no etiological agents can be found in approximately 65% of the cases.[1] It has therefore been generally assumed that a number of viruses may be responsible for a majority of these illnesses.

Impressive, although indirect, evidence does exist that various different, poorly defined viral agents may be a cause of a number of clinical syndromes characterized by diarrhea.[2] With some of these agents, diarrhea has been produced in human volunteers by inhalation[3] or on oral inoculation[4] and some have been passed serially in humans,[4] cats,[4b] calves,[5] and rabbit cornea.[6] Nevertheless, according to Higgins,[7] no complete evidence has yet been adducted in proof of a viral agent in diarrheal disease, largely because such an agent has not been propagated in suitable laboratory animals or in tissue culture.

The present report deals with two related outbreaks of diarrhea among infants from whom it was possible to isolate a virus clearly responsible for the illness. During the summer of 1956, an outbreak of diarrhea occurred among infants in the premature nursery of the New York Hospital. The inmates of this particular nursery had been studied closely for the preceding six months as part of a general investigation into the effect of viral infection on premature infants. In the four-week period preceding the outbreak, no viruses had been detected in this population by weekly throat and rectal swabs.

Epidemiologic Investigation

The first case of diarrhea occurred on July 29; two days later, a second infant became ill. The outbreak then built up gradually and ended abruptly within one week of its onset. Twelve of 21 infants in the nursery were affected. The epidemiologic features of the outbreak are of interest. The premature nursery consists of four separate units, opening into a common corridor. The nursery and medical personnel is the same for all four units. Standards of cleanliness and of nursing and medical care are very high.

Although all infants were individually isolated, cases of diarrhea occurred in all four rooms and appeared distributed at random. Infants in incubators were affected as frequently as those in bassinets. As demonstrated in figures 1 and 2, age and weight did not affect the attack rate. The ages of the affected infants ranged from 6 to 46 days and the weights from 1,000 to 2,200 Gm. (2 lb. 3 oz. to 4 lb. 14 oz.).

A detailed epidemiologic survey failed to suggest any noninfectious causes for the diarrhea. There was no evidence of bacteriological or chemical contamination of formula or water, nor could antibiotics or vitamins be shown to be responsible.

Description of Illness

Clinically, the disease was not severe. None of the sick infants showed significant temperature elevations or hypothermia. Two babies developed moderate abdominal distention; six others appeared lethargic or listless. Physical examinations were otherwise unremarkable; no mucous membrane lesions were noted.

Generally, the diarrhea persisted from one to five days, with a mean duration of three days. Most of the infants passed five or six fairly large, watery, greenish stools each day; on occasion these were expelled explosively. Mucus or pus cells were not present, but in two of the infants small flecks of bright blood were noted on a single occasion.

The illness was treated by a reduction in caloric content of feedings, supplemented by the parenteral administration of water and electrolytes whenever indicated. After subsidence of the diarrhea, the babies were gradually returned to their normal formulas, without recurrence of disease.

From the Department of Pediatrics, The New York Hospital–Cornell Medical Center.

cyanosis occurring. Subjectively, the majority of the patients seemed less fearful of this form of treatment in contrast to electroconvulsive therapy, despite the anxiety occasioned by the delayed onset.

No attempt was made to obtain percentage evaluations relating to the degree of response of the patients in the different diagnostic categories, since we felt that the sample was too small. We observed, however, that, in a comparable group of 25 patients who were receiving electroconvulsive therapy during the period of this initial study, 9 of the patients receiving hexafluorodiethyl ether and only 5 of those receiving electroshock therapy had been released from the hospital. Whether this trend is significant will be seen when this study is extended.

Comment

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Since submitting this manuscript we have administered more than 1,000 treatments with hexafluorodiethyl ether to about 80 patients. Our general impressions have remained unchanged.

29 S. Greene St. (1) (Dr. Krantz).

The hexafluorodiethyl ether used in this study was supplied as Indoklon by the Ohio Chemical & Surgical Equipment Company, Madison, Wis.

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ACUTE APPENDICITIS.—In a recent analysis of the deaths from acute appendicitis in Philadelphia from 1944 to 1953 inclusive, the mortality was reduced from 1 per cent to less than 0.5 per cent. The appendix had ruptured in 67 per cent of the fatal cases. In this study peritonitis was the cause of 56 per cent of the deaths. It was of interest that this figure was about the same for each of the ten years studied and was not lowered in the most recent years even though antibiotics were widely used. The mortality is greatest in patients over 50 years of age or in children under ten years of age. In the older patients, concomitant diseases oftentimes were an important factor in the death; in childhood, disturbances in the electrolyte balance and dehydration were of great significance.—F. A. Bothe, M.D., Appendectomy, *The Surgical Clinics of North America*, December, 1957.

Both nurses from whom the N_5 agent was recovered showed antibody titers of 1:8 in their acute phase specimen, which had risen to 1:64 two weeks later.

Thus, all infants with diarrhea showed evidence of infection with N_5 virus, while none of the well infants did. A Chi-square test showed that this difference is highly significant ($p > 0.001$).

Two weeks after the end of this outbreak, tissue cultures of stool specimens collected from all infants in the premature nursery once again failed to show the presence of a virus.

Outbreak of Diarrhea Among Full-term and Older Infants

Four days after the termination of the outbreak among premature infants, diarrhea was noted among patients in a sick infant ward in the same hospital. Within a four-day period, five babies became ill with signs and symptoms similar to but somewhat more severe than those shown by the prematures. The age of these patients ranged from one week to two months and their weight from 3,300 Gm. to 6,200 Gm. (7 lb. 8 oz. to 13 lb. 10 oz.).

Bacteriological studies on stools and respiratory tract secretions were unremarkable, but with use of monkey kidney tissue cultures, cytopathogenic agents subsequently shown to be identical to the N_5 virus were recovered from the stools of all five infants with diarrhea. No virus was found in 10 well infants on the same ward. Paired acute and convalescent serum specimens from the sick patients showed fourfold rises in antibody titer to N_5 virus.

An investigation into the source of this second outbreak revealed that one of the two nurses from whom N_5 virus had been recovered in the survey of the premature nursery staff had supervised the sick infants floor three days prior to the outbreak of diarrhea in the first baby. She recalled having handled at least two of the infants who subsequently became ill.

Identification of N_5 Virus

Identification of the N_5 virus was attempted. The tissue affinity and the type of cytopathogenic effect obtained suggested that this agent belongs to the enteric cytopathogenic human orphan (ECHO) group. This impression is supported by the findings that it is nonpathogenic to suckling mice, and therefore probably not a Coxsackie agent; antiserums to the three types of poliomyelitis virus do not neutralize it, and it does not possess the complement-fixing antigen common to the adenoviruses.

The virus was tested against antiserums prepared with the 14 prototyped ECHO agents recognized at the time, and against antiserums to five similar enteric viruses more recently isolated by Ramos-Alvarez in A. B. Sabin's laboratory.[9] Comprehensive neutralization and cross-neutralization tests revealed the immunologic identity of the N_5 virus and the D-3 prototype of Ramos-Alvarez and Sabin. The D-3 virus has subsequently been accepted as ECHO type 18 by the committee on the ECHO viruses.

Comment

After the advent of tissue culture methods, virology entered an era similar to that faced by bacteriologists more than 60 years ago. The application of new tools to the search for microbes led to the discovery of innumerable new agents. At the present time, the chief problem in virology probably is not so much the isolation of new agents but rather the determination of the role that already known agents play in the causation of disease.

The simple, temporal association of commonly occurring viruses with some disease entity cannot be accepted as proof that this particular agent is responsible for the observed illness. Before a virus can be called the "cause" of any disease, much additional evidence must be obtained, most important of which is perhaps that available through epidemiologic methods.

Tissue Affinity and Results of Neutralization Tests on Viruses Obtained from Infants and Staff

Source	Virus Strain	Cytopathogenic Action in Human Amnion Culture[*]	Neutralized by Rabbit Antiserum to B-1 Strain
Infants	B-1	No	Yes
	B-2	No	Yes
	B-3	No	Yes
	B-4	No	Yes
	B-5	No	Yes
	B-6	No	Yes
	B-7	No	Yes
	B-8	No	Yes
	B-9	No	Yes
	B-10	No	Yes
Staff	S-1	No	Yes
	S-2	Yes	No[†]
	S-3	Yes	No[‡]
	S-4	No	Yes
	S-5	Yes	No[‡]

[*] All viruses showed cytopathogenic action in monkey kidney cultures.
[†] Neutralized by poliomyelitis type 1 antiserum.
[‡] Unidentified agents.

The evidence that ECHO 18 is etiologically related to diarrhea in infants may be summarized as follows: 1. Evidence of infection with the virus was found in every infant with diarrhea, but not in those who remained well. These differences showed a high order of significance by statistical test, indicating that chance association was unlikely. 2. A significant rise in antibodies to ECHO 18 occurred in all infants with the disease and was temporally related to the course of the illness. 3. ECHO 18 was found among infants in the premature nursery only during the course of the outbreak; the virus was not present before or after the epidemic had run its course. 4. A second outbreak occurred among other infants in a different part of the same hospital after exposure to a nurse known to be excreting ECHO 18. Again, a definite association between the presence of the virus and the appearance of diarrhea was demonstrated. 5. ECHO 18, in our experience, is not a commonly occurring virus. We have been unable to isolate it from nearly 100 stool specimens obtained from young children with various types of illnesses.

The conclusion that ECHO 18 caused the two separate but related outbreaks of diarrhea is thus strongly supported by epidemiologic, immunologic, and statistical analyses. It is perhaps fortunate that in this instance ECHO 18 had an "all or none" effect on its hosts; when the virus was present, diarrhea invariably occurred. Had the agent caused any appreciable amount of subclinical illness, the statistical approach might not have provided an answer.

It is obvious that absolutely incontrovertible evidence in favor of the association between the virus and diarrhea might be obtained by suitably designed observations with human volunteers. The possibility must then be considered that this agent may on occasion produce an entirely different clinical syndrome in older children and adults; thus studies of this type might not be worth the risk.

Of some clinical interest are the observations concerning the course of the illness in premature infants. Considering their relatively poor response to bacterial infection, these infants withstood their illness surprisingly well. Not only was the disease relatively mild but a prompt antibody response occurred, sufficient to control the infection in a short time.

Summary

Evidence has been presented linking ECHO virus type 18 to two separate but closely related outbreaks of diarrhea in premature and older full-term infants. This represents the first instance in which a virus isolatable by laboratory methods has been shown to be a cause of an outbreak of epidemic diarrhea.

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Dr. W. H. Ewing of the Communicable Disease Center, U. S. Public Health Service, supplied the Esch. coli typing serums used in this study. Virus antiserums and prototypes were kindly supplied by Dr. Albert B. Sabin.

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MENTAL RETARDATION IN PHENYLKETONURIA.—Phenylketonuria is a condition in which there is an inherited biochemical defect in the normal oxidation of phenylalanine to tyrosine. . . . Persons with this defect are almost always mentally retarded, usually to a severe degree. Most authors make no comment, or only incidental mention, of seizures in patients with phenylketonuria, but Cowie, Woolf and Vulliamy, and Bosma and associates have commented upon the frequency of coincident epilepsy. Penrose mentioned in 1946 that some affected children had seizures but that he had never observed them in phenylketonuric adults. The incidence of this disease in the population at large is not known; the frequency in institutions for retarded children was found to be 1% in the northeastern United States by Jervis, 1% in Utah, 1.2% in Britain, and 0.04% in Switzerland. Because this metabolic entity has been well studied chemically and clinically, because we find seizures frequently, and because control of the chemical aberrations has been achieved by dietary means, phenylketonuria lends itself well as a model for electroencephalographic (EEG) studies of metabolic disease affecting the brain.—N. L. Low, M.D., J. F. Bosma, M.D., and M. D. Armstrong, Ph.D., Studies on Phenylketonuria, *A. M. A. Archives of Neurology and Psychiatry*, April, 1957.

URGENT SURGERY FOR FINGER FLEXOR TENDON AND NERVE LACERATIONS

WITH EMPHASIS ON ADVANCEMENT OF THE DIVIDED PROFUNDUS TENDON DISTAL TO THE LEVEL OF LACERATION

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This article is an outline for the care of flexor surface lacerations to the fingers and thumb. It is hoped that it will serve as a guide for the surgeon whose experience is insufficient to have established a definite pattern of care for injuries at different levels of the fingers and thumb. The concept of advancing the divided profundus tendon distal to the level of laceration is emphasized. By so doing, the cutaneous laceration and the tendon laceration do not granulate and scar at the same area.

General Anatomy

Each finger is essentially the same, having two flexor tendons, sublimis to the middle phalanx and profundus to the distal phalanx. The intrinsic hand muscles flex the proximal phalanx. The thumb differs, having only one long flexor tendon which motivates the distal phalanx, and the intrinsic hand muscles flex the proximal phalanx, there being no middle phalanx. Each digit has two volar digital nerves, one ulnar and one radial. The long flexor of the thumb and the sublimis and profundus tendons of the fingers run in relatively nonexpandable conduits or tendon sheaths, from proximal to the metacarpal heads to the distal joints. Minor repeated traumas of everyday use lead to stenosing tenosynovitis interfering with smooth gliding of the tendons within the sheaths. Major trauma of laceration through the skin, subcutaneous fibrofatty tissue, tendon, sheath, nerve, and periosteum of the phalanges is devastating to function.

History of Injury

"Where, when, and how" the injury was sustained are important.

Where.—The surrounding of farm or factory may influence the nature of the wounding.

When.—The time elapsed after injury influences the treatment. Tendon suture is rarely undertaken if the wound is over six hours old. Exceptions are made in very clean incised wounds with minimal contamination.

How.—The mechanism of injury and the object causing the tendon division are important in deciding what may be accomplished.

The cooperation of the patient and his tissue reaction in past injuries, as well as his age, are factors influencing the final outcome. Failure results when infection supervenes after the wounding and initial surgery.

Injuries to the flexor surfaces of the fingers and thumb may divide the tendons of the superficial and deep flexor muscles, damage the corresponding tendon sheaths, or interrupt digital sensory nerves. The effects on functions are devastating, especially if both the profundus and the sublimis tendons have been cut, unless surgical repair is successful. Infection, rough handling, probing, and too much dissection make for poor results. In very clean wounds an expert can restore fair or good function. When the surgeon encounters a contused or contaminated wound, or is in doubt how to proceed, he will best serve the patient by cleansing the wound and closing it without tendon repair. After the wound is well healed, a tendon graft can be performed. The techniques here described emphasize the possibility of locating the tendon sutures at levels other than the site of laceration, so as to minimize adhesion and scarring. In some situations it is necessary to excise the sublimis tendon and rely on suturing the profundus. If the profundus tendon has been divided by a laceration less than 2 cm. from its insertion, the proximal end of the lacerated tendon can be advanced for attachment to the distal phalanx. It is essential that the wrist and finger joints be kept in a properly flexed position by external immobilization during the period of healing.

Examination

The local examination is carried out under aseptic conditions with the examiner masked. With complete tendon division, the finger is straight beyond the laceration, i. e., the position of function in semiflexion is absent. In the adult, active motion of each joint of the involved digit and sensation to pinprick are tested. In the child, active motion may be observed, but sensation testing is usually inconclusive. In uncooperative adults and children, one should assume that the adjacent digital nerves are

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divided at the wound level until continuity or division is demonstrated at surgery. Many times the periosteum or joint capsule is divided deep in the wound.

Wounds should not be explored or probed at this stage. Explorations are withheld until the surgical field is properly prepared. The x-ray may indicate a depression of the cortex of the phalanx, a fracture, or the presence of a foreign body. Tendons are not primarily sutured in fractured fingers.

Operation

Dry Field and Anesthesia.—Surgical damage is held to a minimum by careful handling of tissues clearly visualized in a dry field by a pneumatic tourniquet in a patient under general anesthesia. When local or wrist nerve-block anesthesia in the hand and fingers is the choice, relatively painless hemostasis may be obtained by wrapping the forearm with a gum rubber bandage. This broad compression of the forearm can usually be tolerated for between 30 and 60 minutes in a patient under sedation and narcosis. A rubber-band tourniquet at the base of the finger is not recommended, nor is ulnar nerve block in the confining sulcus at the elbow. Both of these techniques may lead to chronic compression neuritis.

Wound Preparation.—The extremity is scrubbed to the wound edges for at least 10 minutes with white or green soap. Alcohol and other skin antiseptic solutions may be used but certainly not in the wound. The wound is extensively irrigated with saline solution. Mechanical cleansing may be facilitated by daubing the wound with a sponge wet with saline solution while the irrigating stream of saline solution is directed into the wound. In instances where surgery is undertaken with use of local anesthesia, it is well to do a regional nerve block prior to final irrigation and cleansing of the wound.

Instruments, Technique, and Suture Materials.—Adequate instruments should be available in practically every operating room. These include dural-type forceps, other small thumb forceps, mosquito hemostats, skin hooks, small rake retractors, the Bard-Parker no. 15 blade on the small handle, and small sponges. The bulb-type syringe should be available for irrigating with saline solution. Small semicircle needles used in eye surgery and small, straight, round needles are included.

The preferable technique is minimal handling of the tendon and tendon sheaths. Bleeding is held to a minimum by the pneumatic tourniquet. The wound is irrigated with saline solution to free it of discoloration and blood. This solution is blotted up gently with a moistened sponge. Dry sponges are not blotted against tendons or tendon sheaths.

Often it is desirable to drill a hole in bone for tendon fixation at the distal phalanx. The cutting type of straight skin needle is used as a drill point (fig. 1*D*). This needle is simply placed in the regular type of hand drill and drilled across the distal phalanx and out through the nail. Two such needles are inserted. The wire sutures from the proximal tendon are threaded through the eye of the needles and pulled through the phalanx and nail and are tied over the nail without special buttons or pads.

Suture material is limited to wire and silk. The single-filament no. 34 and no. 36 stainless steel wire may be used. The silk preferred is 000000 braided white silk. This silk suture is available on swaged needles of a small caliber which are either straight or curved. These swaged needles pass through the tendons or nerve with a minimal injury to the tissue.

The tourniquet is released prior to closure for completion of hemostasis.

Wound Exploration.—It is usually necessary to extend the wound both proximally and distally. This is done with the least harm by extending the laceration to the lateral midline between the flexor and extensor surfaces (fig. 1*A*, *B*, *C*, and 2*A*, *B*, *C*). The incisions may be extended proximally laterally on one side of the finger and distally in the lateral midline on the other side of the finger. Adhesion of tendon to incision and flexion contracture will result from extending the laceration longitudinally along the flexor surface of the finger.

When extending the wound, care must be exercised to incise only the skin and the subcutaneous tissue superficial to the neurovascular bundle (fig. 1*B*, *C*, and 2*B*, *C*). When there is doubt about the identification of the neurovascular bundle, the undermining of the skin should start in the area of normal tissue. Then one can work toward the edge of the laceration. If the digital artery is lacerated, one can be almost certain that the nerve is cut. The nerve end may be identified by gentle spreading of the tissues with a mosquito hemostat. Between 3 and 10 fibrils are contained within the nerve. The vessel should not be ligated until the nerve ends are identified. Identification may be maintained with a tag of 000000 silk suture. Both digital nerves should have preoperative function, or they should be explored and sutured as necessary.

The tendons are larger and more easily identified. The distal end is the easiest to find. The sheath should be opened laterally. The distance of proximal tendon retraction depends on the strength of the muscular contraction at the time of tendon division. When the profundus tendon is divided in the distal half of the finger, it may be prevented from retraction into the palm by the mesotendon at the level of the middle phalanx. Laceration in the proximal half of the finger leads to considerable retraction of one or both flexor tendons. Identification of the tendons may be necessary by transverse incision in the palm of the hand just proximal to the distal palmar crease (fig. 2*D*). Identification of the profundus tendon is made by the attachment of the lumbrical muscle. The sublimis tendon has no muscle attachment in the hand. Hemorrhage into the tendon sheath may be mistaken for lumbrical muscle. The most innocuous instrument for guiding the tendon back into the sheath is a fine-caliber, moistened catheter. It is introduced from either the surgical palm wound or the laceration. At the time of the identification of the proximal end of the divided tendon, a 000000 white silk suture or no. 34 to 36 stainless steel wire is interwoven in the distal 0.25 in. of the tendon. This in turn is tied or sutured to the catheter. By leaving several inches of suture between the tendon end and the catheter, one may preserve this suture for use in the final tendon anastomosis.

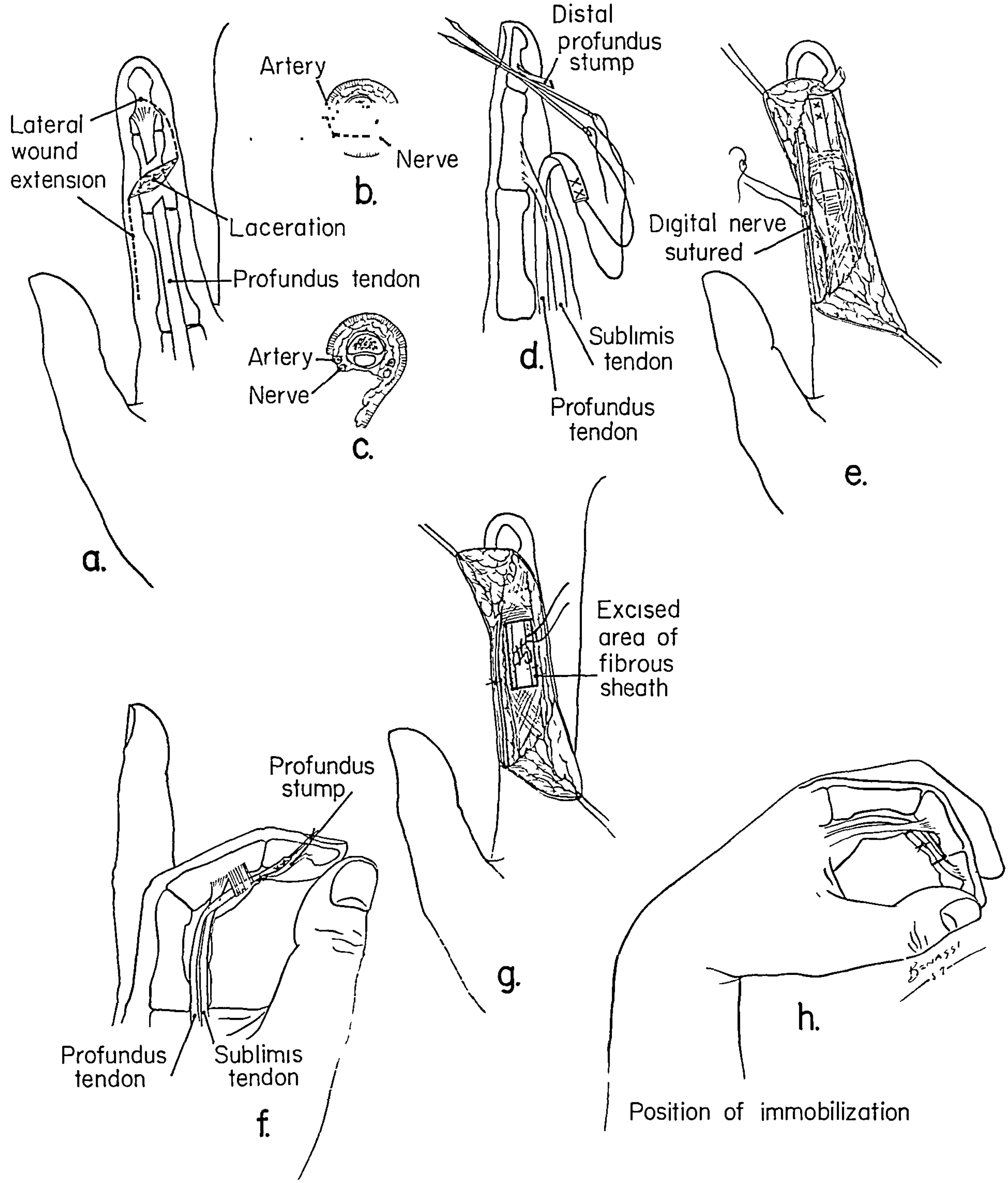

Fig 1.—Primary tendon suture at middle phalanx.

Tendon Repair at Different Levels—Fingers

Injury—Laceration Within One Inch of Insertion of Profundus, Only Profundus Tendon Divided (fig. 1*A*, *D*, *E*, *F*).—Advance the proximal end of the lacerated tendon to the finger tip.

This procedure is carried out by extending the incision laterally up to the middle of the distal phalanx and then across the pulp to about the middle of the flexor surface. Expose the distal stump of the flexor tendon and pull it out of the flexor

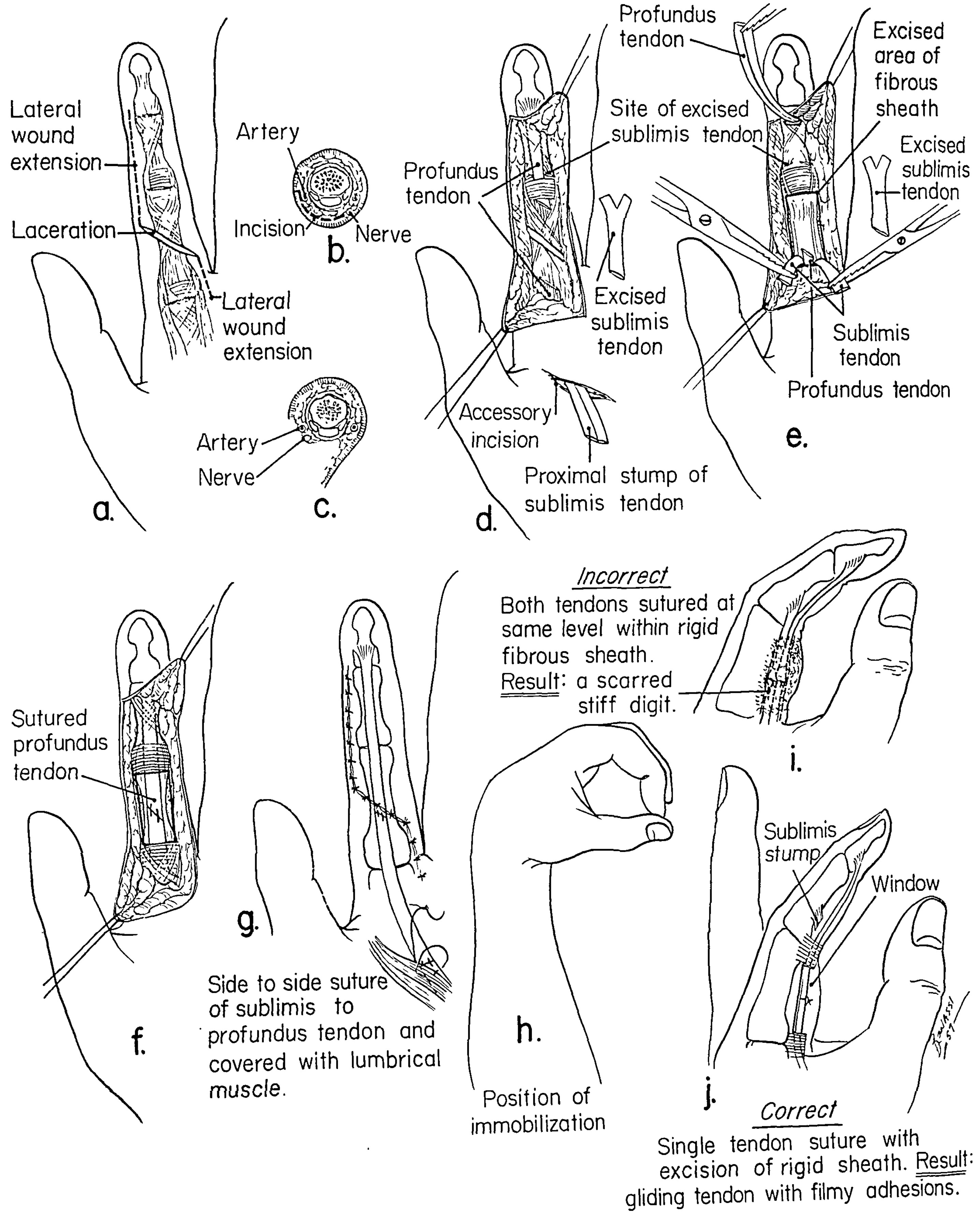
Lateral wound extension
Laceration
Lateral wound extension
a.
Artery
Incision
Nerve
b.
Artery
Nerve
c.
Profundus tendon
Profundus tendon
Site of excised sublimis tendon
Excised sublimis tendon
Accessory incision
Proximal stump of sublimis tendon
d.
Excised area of fibrous sheath
Excised sublimis tendon
Sublimis tendon
Profundus tendon
e.
Sutured profundus tendon
f.
g.
Side to side suture of sublimis to profundus tendon and covered with lumbrical muscle.
h.
Position of immobilization
Incorrect
Both tendons sutured at same level within rigid fibrous sheath.
Result: a scarred stiff digit.
i.
Sublimis stump
Window
j.
Correct
Single tendon suture with excision of rigid sheath. Result: gliding tendon with filmy adhesions.

Fig. 2.—Primary tendon suture at proximal phalanx.

sheath. Roughen the bone underneath the insertion for the receiving of the new tendon insertion. Two straight cutting needles are directed from the incision through the bony phalanx and out through the nail. Both are left protruding on each side of the finger. A stainless steel suture, no. 34 wire, is woven through the distal 0.25 in. of the proximal end of the profundus tendon. Wires are directed through the distal sheath. Each wire is put through a needle. Care is given to avoid twisting the tendon. The needles are withdrawn through the nail, leaving the wires. With the wrist and finger flexed, the tendon is easily pulled to its new insertion at the distal phalanx. The wire sutures are tied over the finger nail. The distal stump is trimmed so that the raw area is against the advanced tendon. The stump is laid over the transferred tendon. A suture holds each side of the advanced tendon to the overlaid stump (fig. 1*F*).

The divided nerves are sutured with 000000 white silk or eye silk. The tendon sheath is not sutured. The wound is closed by approximation of the tissues as required. Skin sutures are all that are needed in many instances.

Injury—Laceration of the Middle Third of the Finger, Profundus Tendon Divided (fig. 1*G*, *H*).—Either suture tendon end to end or resect a short portion of the distal stump to the advance suture line, then make end to end suture.

When the profundus tendon is divided more than 1 in. from its insertion, but distal to the proximal interphalangeal joint, an end to end anastomosis is indicated. This may be associated with some laceration of a portion of the sublimis tendon as it spreads laterally. Under these circumstances the sublimis laceration is smoothed. If the profundus tendon is sutured at the level of the injury to the sublimis tendon, adherence surely will take place (fig. 2*I*). In this instance the distal stump of the profundus tendon may be shortened 0.25 to 0.5 in. This permits the end to end suture at a point distal to the injured sublimis tendon. The tendon suture is interwoven in each end of the divided profundus tendon and then tied. A window of the tendon sheath is removed for 0.5 in. on either side of the suture line.[1] The tendon callus will be less adherent to subcutaneous fat than it would be to tendon sheath (fig. 2*J*). Appropriate nerve and skin repair is carried out.

Injury—Laceration Over Proximal Phalanx, Both Sublimis and Profundus Divided (fig. 2*A*, *D*, *E*, *F*, *G*).—Excision of the sublimis tendon and end to end suture of profundus tendon should be done.

This is a devastating injury. Only those surgeons mastering simpler tendon injuries should undertake the primary repair. Should the operator have doubt as to his skill, he should prepare the wound properly, approximate the nerves in the usual fashion, and close the wound. No attempt should be made to approximate tendons. Exploring for the tendons or excessive handling of the tissues promotes fibrosis. The scarring should be kept to a minimum so that the bypass of the scar by the tendon graft will accomplish its purpose of nonadherence to the wound. Within three or four weeks an elective tendon graft may be performed by one familiar with the procedure.

When urgent reparative surgery is undertaken with primary tendon suture, it is necessary to excise the sublimis tendon from its insertion to a point proximal to the tendon sheath in the palm of the hand (fig. 2*D*, *E*). Sublimis and profundus tendons may be sutured side by side in the palm to give a two-muscle, one-tendon finger (fig. 2*D*, *G*). An alternate method is to pull the sublimis tendon out of the laceration, cut the proximal portion, and permit it to retract (fig. 2*E*). Thereafter, the profundus tendon is sutured. A broad window is removed from the tendon sheath in the area of suture. Excessive handling of the fibrous tendon sheath and the tendons in this area of so-called "no man's land" between the distal palmar crease and the level of the proximal interphalangeal joint leads to extensive scarring (fig. 2*I*). Probing and dissecting in this area contributes to adhesion. Suture of both tendons at the same level leads to a single scarred tendon.

In very clean wounds in the hands of experts excision of the sublimis and suture of the profundus give good to fair functioning fingers. I believe that many are teaching initial wound surgery with closure and later tendon grafting for these severe wounds.

Tendon Repair at Different Levels—Thumb

The long flexor tendon of the thumb may easily be advanced if laceration is within an inch of the insertion. Otherwise, end to end suture may be accomplished. With careful handling, one should expect good results from this repair. Adherence of the sutured area depends considerably on the amount of damage to the small muscles of the thumb. Surgical repair in the area of the small muscles of the thumb is prolonged and traumatic when attempted without a tourniquet. Special care must be exercised to prevent further injury to the digital nerves. Divided nerves must be repaired.

Postoperative Care

Bulky dressings are applied. The wrist is flexed about 45 degrees, and the finger is flexed sufficiently to touch the thumb (fig. 1*H* and 2*H*). Gauze dressings are placed next to the wounds. Position is held by plaster splints or a cast. In children, long arm casts are applied with the elbow flexed. Children may wiggle out of the short arm casts and splints. A distal shift of the splint will straighten the wrist and finger and may disrupt the tendon and nerve suture.

An early dressing change is essential in hot weather to prevent maceration of the wound edge by perspiration and bloody dressings. Perhaps all patients should have the initial bloody dressing changed to prevent maceration.

The wrist and finger are held in flexion for three weeks. During the third week the patient may wiggle the finger in the dressings. The wire suture emerging from the fingernail bed is pulled out three to four weeks after the surgical repair. One side of the wire loop is cut near the fingernail. The knot and the remaining portion of the wire are gently pulled out of the distal phalanx. If the wire does not come easily, a square of adhesive tape is simply placed over the wire and the fingernail. One week later the wire is again slowly drawn out. In the rare instance that the wire cannot be pulled easily, both edges of the loop may be cut close to the fingernail, to be covered by the fingernail as it grows out. No harm will result therefrom.

During the fourth week, a splint holding the wrist straight is applied. This is removed two or three times a day for soaking in warm water. Active motion is attempted. Passive motion is not tried at any time. By the end of the fifth week the patient should try to do light manual work.

Beginning with the fifth week the patient discards all splinting. He is urged to exercise each joint of the finger individually, holding the proximal portions of the finger and the wrist straight with the other hand. Those who perform muscular work tend to get the best results.

Comment

The occasional surgeon should expect good results from advancement of the tendon to the tip of the finger. In effect, this procedure places normal tendon at the level of the laceration. End to end suture of the profundus tendon unaccompanied by injury to the sublimis tendon should give good results. Stiff and awkward fingers result from suture of both tendons at the same level (fig. 2*I*). Primary suture of the profundus tendon with excision of the sublimis tendon gives good results in some cases. Such surgery will be better left to the more experienced surgeon. Tendon grafting is a procedure to be undertaken by those who have mastered the primary phases of tendon repair.

Tendon graft to replace the profundus in cases of good function of the sublimis is not advocated. The operative procedure necessitates manipulation and handling of the whole sublimis tendon into the hand. This leads to some adhesion in the sheath from the palm of the hand to the middle phalanx. Recovery of function is not sufficient in the distal joint of the finger to justify reduction of normal function at the proximal interphalangeal joint and at the metacarpophalangeal joint.

Cleansing of the wound, nerve repair, and wound closure is a recommended procedure when both tendons are divided. Later a tendon graft may be accomplished under ideal conditions. Should adherence of primarily sutured tendons prevent active motion, lysis of the repaired tendon is a wasted procedure. A finger is suitable for tendon graft if all other tissues in the finger are good. Had primary suture not been attempted, less scarring would be present for the grafted tendon.

Occasionally, a stab wound in the proximal portion of the finger may divide the profundus tendon but not the sublimis tendon. At this level, the fibrous sheath is well defined. Personal experience with repair of the profundus tendon at this level has not been good. The level of end to end suture may be advanced. If no suture is done, the finger will have a normal metacarpal phalangeal joint and good motion at the proximal interphalangeal joint. The loss of active motion at the distal joint in an otherwise normal finger is preferred to one with a little motion at each interphalangeal joint as a result of surgical failure of the profundus suture.

Another observation is the lack of recovery of hyperextension of the interphalangeal joint of the thumb after fixation of the digit in flexion for three weeks during the tendon healing period. The degree of hyperextension varies in individuals. Its loss does not appreciably reduce the function of the thumb.

Attempted motion before three weeks' healing time is not successful. It is doubted that any suture can be placed in these tendons that will eliminate the need for external immobilization.

Conclusions

In the management of flexor tendon injuries in the fingers and thumb, the tendon suture may be advantageously advanced beyond the level of laceration. Adhesion is thereby minimized. Nerves should be sutured delicately. Recovery of sensation is the rule. External immobilization of the wrist and involved fingers is advocated.

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DIAGNOSIS, PROGNOSIS, AND REHABILITATION IN PATIENTS WITH APHASIA

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A patient recovering from a cerebrovascular accident needs all of the support and encouragement that can be provided in view of the organic and psychological trauma he has suffered. The existing aphasia should be considered as a disturbance having four aspects or involving four functions: understanding, talking, reading, and writing. Careful diagnostic tests identify the nature of the impairment and form the basis for establishing a program of therapy. The goals are thought of in terms of basic communication, home adequacy, social acceptability, and vocational adequacy. In a large rehabilitation center an aphasia therapist should assume leadership in helping other members of the rehabilitation team to understand the patient and to coordinate the program. Group therapy is applicable in many forms, and it helps to provide multistimuli situations. The families of aphasic patients also need support and guidance. A family group session sometimes helps to bridge the gaps from the rehabilitation center to the sheltered family home and thence to the world outside.

The aphasic patient presents a complex and difficult problem to all concerned; however, through careful evaluation of his medical, physical, language, social, and personality status, much can be done to help him. There are those in the medical and rehabilitation fields who regard the aphasic patient as hopeless or who contend that a rehabilitation program has no significant influence on the improvement of such a patient's ability to communicate. These workers insist that, after a cerebrovascular accident, recovery of communication mechanism, if it will occur, is based on spontaneous recovery within the nervous system by reorganization processes of the residual cerebral functional capacity. Nature does, and must, play its role in the readjustment period, but such spontaneous restitution is of value to the patient only if controlled stimuli are applied to provide its integration and function.[1]

It has been well established, however, that early retraining does much to increase the functional language ability of the patient and aids in alleviating the depression and anxiety which, in themselves, create havoc with his general language function. We have found that those patients who are seen early after the loss of their language ability are better able to adjust and are better motivated than those who, through either poor advice or lack of information, delay therapy.

The unique psychological status of one who finds himself suddenly without (or with depleted) speech is overwhelming. No definitive psychotherapeutic measures are of value in these situations; however, much of the emotional support which comes from a patient-therapist relationship is essential and implicit in a rehabilitation team. Without it, no amount of routine retraining is of value—nor will nature, in its act of spontaneous recovery, provide it. These patients need all of the support and encouragement that can be provided in view of the organic and psychological trauma they have suffered.

Emphasis in the treatment program is based on the concept of the whole patient.[2] How a person handles environmental stress and stimuli is dependent on the dynamic combination of three basic factors. These are his physical abilities, his emotional status (inner resources), and his social surroundings. Even though one of these factors may be deficient, it has been found that satisfactory adjustment may be made in the other two. This is possible through utilization of the reserve physical potential, reorientation of the inner (emotional) reserves, and control or correction of the social environment. New combinations of these may be found and used by the disabled person so that an adequate adjustment can be made for meeting the stresses which occur in his life.

It is the purpose of this paper to attempt to clarify the methods and benefits of working with aphasic patients within the framework of the general rehabilitation team setup, with emphasis on the language area.

Although most patients seen in a comprehensive rehabilitation setting are referred for "speech" help, an associated hemiplegia or hemiparesis usually exists. Many patients seem more concerned with

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the inability to walk or to use an arm than with the more disabling loss of their speech. The process of reeducating the patient is not only directed at the language difficulty but is combined with a well-rounded physical restoration program. The benefits derived from such a comprehensive program and multidirected therapy have been encouraging and should be made available to all aphasic patients, regardless of whether there is an associated hemiplegia or other organic involvement.

Diagnosis

From the standpoint of diagnosis and language evaluation, it is necessary to consider the patient in relation to the four main language modalities[3]: (1) understanding, (2) talking, (3) reading, and (4) writing. Disturbed function or impairment in one of these language modalities is reflected in the others, according to the dynamic theories of cerebral function as described by Schuell.[3]

Impairment, rather than complete loss of a language function, is generally found, since residual function is usually present. The therapist must determine which areas of language are predominantly affected in order to determine how to proceed with retraining, and he does so through a careful screening test which includes hearing and visual evaluation. This takes into consideration the patient's functional ability, that is, his language use incidental to performing such activities of daily living as using the telephone, writing his name, reading the newspaper, handling money, and using the calendar and clock. Ability in mathematics also must be investigated, from that required for simple calculation to that for more involved problems.

Diagnostic Classifications

There are two working hypotheses of significance in making a diagnosis of aphasia: 1. Involvement and impairment of one of the cerebral functional areas is reflected in more than one language modality. 2. Impairment of any modality often involves more than one cerebral function. Just as an infant needs and depends on hearing, listening, and understanding to develop speech, an aphasic patient also needs these abilities. What happens to a deaf or hard-of-hearing child as a result only of his inability to hear is obvious. Evidence is available from work with the aphasic patient which indicates that many expressive disturbances are a direct result of deficiency in auditory understanding and that all aphasic patients show some disturbance in this language modality area. In this respect, it has been found possible to group patients into four different diagnostic classification groups[4]: (1) receptive-type aphasia, in which the primary difficulty appears to be comprehension; (2) expressive-type aphasia, in which the greatest difficulty exists in the expressive areas of language and might include some or all of the modalities of communication; (3) expressive-receptive aphasia, in which there is apparent equal involvement in both the expressive and receptive functions of language; and (4) global aphasia, in which there appears to be no language capacity in any area of communication.

Receptive: Understanding.—Disturbance in receptive function is usually present to some degree, since all language modalities serve to reinforce one another and loss in one area would necessarily affect another. However, when a patient is totally unable to recognize gross sounds or individual words, to match similar objects or forms, or to recognize written single words, prognosis is less favorable than if there existed only an inability to say or write the word, which is more predominantly an expressive disturbance.

Hearing and visual problems (hemianopsia) are frequently present and must be screened. The level of auditory understanding must be determined. Are gross sounds, words, letters, numbers, directions (both simple and complex), and conversation understood? To what extent is the auditory memory affected?

Receptive: Reading.—In the receptive-visual area the following determinations must be made: Can the patient match and recognize objects, pictures, letters, numbers, words, phrases? What is his reading-understanding level, on the basis of graded reading tests?

Expressive: Talking.—Problems of verbal expression must be evaluated. Can the patient imitate sounds, words, sentences? Is there an accompanying dysarthria? Does word-finding difficulty (anomia) exist, and is the patient's speech garbled, inverted, or filled with complete but inaccurate words? Does difficulty with grammar exist to the extent either of total lack or of confusion of connective words? To what extent is thought organization affected? Also, such compensatory procedures devised by the patient as tendencies to perseveration, stereotyped phrases, and clichés or automatic speech, as well as his ability to gesture, are carefully noted, as are the patient's reactions to his mistakes and his emotional stress.

Expressive: Writing.—The visually expressive area is investigated. Switch of handedness is frequently the problem, but determinations are also made of whether the patient can copy designs and letters, write words or sentences from dictation as well as spontaneously, and spell correctly. Frequently, similar mistakes in talking and writing are noted.

Prognosis

On the basis of this careful language screening process, rehabilitation goals can be established and a training program determined. Although frequently tentative, these are arrived at through a cautious, subjective evaluation of the patient and his reactions, with consideration of his premorbid personality factors and of the medical diagnosis and prognosis.

These goals should be guided by the patient's functional language ability, and should be thought of in terms of (1) basic communication, (2) home adequacy, (3) social acceptability, and (4) vocational adequacy.

Basic Communication.—When the patient is unable to perform high-level functional activities in any language modality, efforts are directed toward establishing the basic means of communication, such as writing, signs, and gestures.

Home Adequacy.—Some patients can function in their homes. These have sufficient ability to make their daily wants known and to carry out what are known as the activities of daily living, including managing the telephone, writing their names, and understanding signs.

Social Acceptibility.—Patients with adequate language ability may be able to function in a social environment with intelligent and understandable speech, although minor difficulties are present in the modality areas of reading and writing.

Vocational Adequacy.—It is felt that, with training, some patients would be considered to have adequate enough capacity to qualify for vocational placement, either in former or in new employment.

There are few patients who cannot be helped through a therapeutic program. These are the patients in whom there is severe involvement in all areas of language or in whom generalized brain damage exists.

Treatment

The treatment program is divided into both individual and group therapy sessions and includes both definitive and multistimuli procedures. The therapeutic procedures are carried out in the speech and hearing units as well as such other departments within the rehabilitation center in which the patient will receive his treatment as the nursing, physical therapy, social service, and occupational therapy units.

The aphasia therapist is usually the one most familiar with the problems peculiar to the aphasic patient; therefore, he should assume the leadership in helping other members of the rehabilitation team to understand the patient and coordinate the treatment program.

Aphasia involves more than a language problem; it includes the necessity for adjustment in many areas. Some symptoms may be due not to actual brain damage but rather to the patient's idea of "self" and his status in life. The opportunity obtained from training in the nursing or occupational therapy units in carrying out procedures of the activities of daily living provides, in many instances, the first step to independent living and the regaining of self-respect.

Morale building is the constant concern of all therapies, and records are made and kept of the patient's progress since he is apt to lose sight of it. Recordings of the patient's own speech, made at various intervals, are good indicators of progress and have been found helpful and encouraging to the patient. The objectives of the training program are based on the small and gradual increments of improvement. In this way a greater sense of achievement may be developed in the patient.

An aphasic patient needs strong stimuli, regardless of which areas of language are affected. The aphasia therapist first establishes areas of difficulty and impairment and, in individual sessions, works with the most basic ones. Size, sound, color, and clarity of material must all be accentuated. Language associations must be enriched and the patient guided to use areas of language which are still intact in order to help the more deficient ones. Specific techniques are adapted to suit the individual patient, which again makes the program more emotionally motivating and concrete; for instance, automobile salesmen might have speech therapy based on automobiles and their parts and including naming, reading, writing, and figuring.

Group sessions have provided a most valuable technique in helping the patient to adjust to his new status. Association with others who are similarly afflicted and seeing more severe problems and also well-motivated patients does much to help the more recently afflicted, depressed patient. A spirit of competition and *esprit de corps* often results from such group activity and does much to stimulate, relax, and support the patient. It has been found that an aphasic patient will make a greater attempt to communicate with someone having a similar disability than he will with those who have normal speech. Anxiety and frustration become markedly reduced. Group activities may consist of choral singing, outings, language games, and group discussions.

Within a comprehensive rehabilitation center, the occupational therapy units may operate the same way as the speech unit (using individual as well as group sessions) and assist in carrying out the individual specific procedures outlined by the speech therapist. Many aphasic patients are hemiplegic, and changing of dominance in upper extremity function is necessary for performance of one-handed procedures in the activities of daily living and for prewriting training.

Occupational therapy can also aid morale and acceptance of disability through creative work despite language loss. Marked psychological, as well as practical, stimulation can be provided through enabling the patient to work with familiar tools and equipment, using them in this instance, however, in a controlled environment. An excellent example of this multistimuli situation is that of housewives with aphasic problems working together in a kitchen. Such a facility as an occupational therapy workshop also provides the individual with an outlet, through physical activity, for the many frustrations that occur to him throughout his day because of his lack of complete understanding or expression.

Most difficult is the job of bridging the gap between the sheltered, protected family and rehabilitation center environments and the world outside. Here, too, part of the rehabilitation goal is to provide an opportunity for outings, picnics, and theater and restaurant parties. Once this seemingly insurmountable hurdle is crossed, with assistance, these patients and their families frequently can carry on by themselves.

A most important phase of the treatment program is the family group session. This provides an excellent opportunity for orientation and education in a most baffling problem for those closest to the patient. It has been found helpful to conduct group sessions in a nondirective way (after an explanatory film on aphasia), with members of the rehabilitation team present to answer any questions pertaining to the patient and his disability. The families of these patients also are in need of support and guidance and receive this both from the therapeutic team and from association with other families facing similar distress. This helps them to adopt a more constructive approach to the handling of these patients and aids them in understanding their share of responsibility in the long-range rehabilitation program.

Summary

The therapeutic program for the aphasic patient involves a setting in a comprehensive rehabilitation unit. Emphasis is on retraining and rehabilitation of the whole patient, and criteria for diagnosis, prognosis, and the setting of rehabilitation goals derive from the consideration of the patient's capacity in all spheres of activity.

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NITROGEN MUSTARD IN LUNG CANCER.—In our experience with more than 1,000 patients with inoperable lung cancer, radiation therapy has provided temporary relief from distress and disability in the majority of the cases thus treated. . . . When radiation therapy became unfeasible or ineffective in the inexorable course of the disease, we found HN_2 to be the only truly helpful chemical agent, especially in anaplastic tumors. Since 1947, we have employed this alkylating compound in more than 150 patients with widely generalized disease, radiation resistance (initial or acquired), exhaustion of radiation tolerance of skin or lung, intractable radiation sickness, and superior vena cava obstruction syndrome. A full course of radiation therapy became possible in patients whose condition before HN_2 treatment precluded any consideration for the use of more effective ionizing radiation. Subjective benefits, observed in about two-thirds of the cases, consist in temporary relief from pain, cough, dyspnea, fever and hemoptysis. Objective results, seen in about one-third of the cases, include decrease in size of pulmonary and metastatic lesions, resorption of pleural fluid, re-aeration of atelectatic lung, decrease in neurological signs, and improvement of the superior vena caval obstructive phenomena. Remissions range in duration from one to seventeen weeks, averaging three and a half weeks, after a course of HN_2. . . . Dose levels of 0.4 mg. per kilogram of body weight per course are employed in one, two, or four fractions, injected directly into the tubing of a running infusion. This course should not be repeated in less than four weeks, to allow for complete recovery of the bone marrow. Nitrogen mustard is a polyfunctional alkylating agent with a high degree of toxicity for the cytoplasm and nucleus of rapidly proliferating cells. It promptly inhibits a variety of cellular enzymes, interfering with such vital metabolic processes as cellular respiration. The pulmonary vascular bed is the first capillary bed traversed after intravenous injection, and hence a higher concentration of the drug is fixed in pulmonary tissues than in more peripheral areas. This may explain the fact that bronchial cancer is the only epithelial tumor significantly affected by the intravenous injection of HN_2.—B. Roswit, M.D., Present Status of Chemotherapy of Bronchial Cancer, *Radiology*, October, 1957.

ABNORMALITIES OF CALCIUM METABOLISM IN PATIENTS WITH "IDIOPATHIC" URINARY CALCULI

EFFECT OF ORAL ADMINISTRATION OF SODIUM PHYTATE

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The daily urinary excretion of calcium in 148 patients with urinary calculi was compared with that in 37 healthy people who had no personal or familial history of such calculi. Patients under home-life conditions on self-selected diets did not differ from healthy subjects as to dietary calcium intake, yet their average urinary calcium output was significantly higher. The effectiveness of sodium phytate in hindering the absorption of calcium from the intestine was studied by comparing the urinary calcium excretion of 104 patients who received phytate with that of 74 subjects who did not; the oral administration of sodium phytate in doses of 125-175 mg. per kilogram of body weight per day caused a distinct and sustained reduction of urinary calcium. Regression or disappearance of existing calcified stones was never observed, and no convincing evidence was obtained as to the efficiency of low-calcium diet and orally administered phytate in preventing stone formation. The complexity of the factors involved in stone formation is illustrated in five case histories. The data indicate, however, that individual differences and derangements of calcium metabolism exist, that a regimen of low-calcium, low-vitamin D intake with sodium phytate by mouth sometimes affords helpful diagnostic clues, and that this regimen has possibilities in both the preoperative and the postoperative care of patients with urinary calculi.

All urinary calculi are composed of an organic matrix (2.5%) and an inorganic crystalline body (97.5%). The latter is calcigerous in 90 to 95% of patients. Many disturbances of calcium metabolism are associated with an increased incidence of renal calculi, but fully 95% of stones are "idiopathic."[1] With the exception of a series of studies by Flocks,[2] there has been no systematic investigation of the urinary excretion of calcium in this class of patients. In 1952, a laboratory devoted exclusively to the study of patients with renal calculi was established at the Bowman Gray School of Medicine. In addition to the routine diagnostic tests and short-term calcium balance studies, there gradually emerged a series of programs designed to reduce the oral intake and intestinal absorption of calcium by patients with idiopathic hypercalciuria. These regimens progressed through three stages: (1) a 300-mg. calcium, low–vitamin D, high-phytate diet, from January, 1953, until June, 1954; (2) a 150-mg. calcium, low–vitamin D, high-phytate diet from June, 1954, until the present, and (3) the 150-mg. calcium diet, to which orally given sodium phytate was added in June, 1955, continuing until the present.

An average of 130 new patients have been examined yearly, but only 148, in whom calculi have formed on more than one occasion, are included in the present report. The criteria for selection (exclusion) of subjects are acceptable only because it is impossible to predict the formation of calculi; hence, one cannot define the "calculus disease patient" before the fact of stone formation has been established. The disease is characterized by periods of exacerbation and remission of stone growth with intercurrent attacks of urinary infection, renal colic, nausea, vomiting, and all degrees of renal parenchymal disease. The selection of control and test subjects from such a variable population is impossible in the present state of our knowledge. It is possible to obtain some meaningful data by comparing patients who have repeatedly formed calculi with subjects who have never formed stones or had any clinical evidence of urinary tract disease, and to this end the selection of subjects was made.

Subjects

The normal subjects were 37 members of the student body and faculty at the school of medicine who had never formed urinary calculi, had no familial history of calculi, and were considered to be in good health.

Patients for the study were selected from those who had had more than one episode of calcigerous renal (ureteral) calculus formation, whose calculi had been analyzed in the laboratory, and who had been under observation for more than three years.

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Read before the Section on Urology at the 106th Annual Meeting of the American Medical Association, New York, June 6, 1957.

These were categorized into group 1 (active) or group 2 (passive) on the basis of a survey conducted between May and September, 1954. Group 1 was composed of 60 patients who had formed new calculi or shown roentgenographic evidence of increase in the size of existing stones within the preceding year. Group 2 was composed of 88 patients who had formed no calculi within this period. Many patients in this latter group had been followed for much longer periods of time, and some had hospital records and roentgenograms available for periods up to 16 years. In all 148 patients urinary calcium and phosphorus determinations had been made 2 to 12 times monthly with roentgenograms at intervals of 3 to 6 months, and all had been on the 300-mg. calcium diet (diet 3, see table 1) for 3 to 18 months. Forty-three (29%) had had calculi in both kidneys, but none had clinical evidence of impairment of renal function or of metabolic disease by previously reported criteria.[1] All were able to concentrate the urine to a specific gravity of more than 1.026; urograms revealed no hydronephrosis or anatomic abnormalities sufficient to warrant surgical correction. Serum calcium, phosphorus, and alkaline phosphatase concentrations were within normal range. Roentgenographic survey of the skull, teeth (lamina), hands, feet, chest, and abdomen revealed no evidence of bone disease or vicarious calcification of soft tissues. Urine cultures were sterile in 38% of the patients, 14% had infection with Proteus organisms, and a variety of organisms were recovered from the remainder. Seventy-seven (52%) were men whose average age was 36 years (range, 19-78 years), and 71 (48%) were women of 41 years average age (range, 22-64 years). Between May and September, 1954, equal numbers of patients in each group were placed either on the 150-mg. calcium diet (diet 4) or on the control regimen (diet 2). An attempt was made to match the control and test groups with respect to the above characteristics. At the time the study began, calculi were present in the urinary tracts of 42 (55%) of the men and in 36 (51%) of the women. During the course of study, calculi were removed only if obstruction or infection made operation mandatory. Calculi were passed spontaneously or removed at operation in 42 patients, and 36 subjects retained their calculi for the entire study period.

TABLE 1.—*Composition of Dietary Regimens Used in Study of Patients with Urinary Calculi*

Diet	Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.	Phosphorus, Gm.	Calcium, Gm.	Calories
1. High calcium, high protein	125	100	400	2.10	1.800	2,900
2. Control	82	82	367	1.30	0.730	2,530
3. *High phytate, low vitamin D, 300 mg. calcium*	80	100	250	1.25	0.300	2,200
4. High phytate, 10 mg. vitamin D, 150 mg. calcium	58	85	221	1.05	0.150	1,900

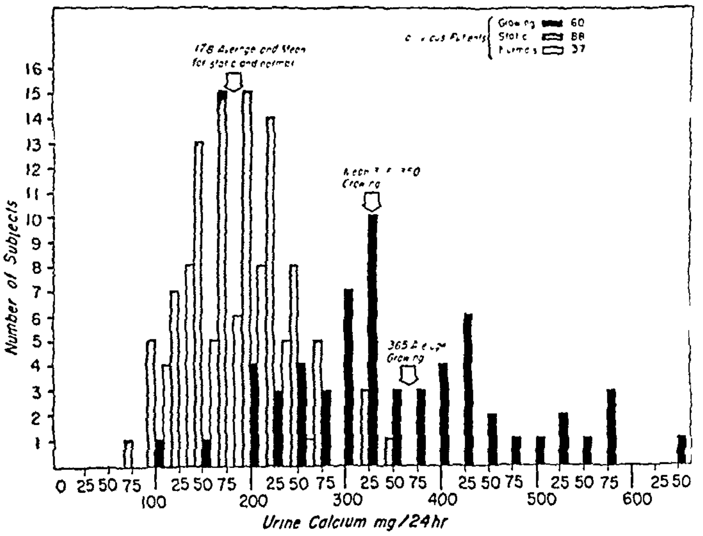

Fig. 1.—Urinary excretion of calcium by patients with calculi and by normal subjects during usual physical activity. Self-selected diets included calcium intake of 1,000 mg. (±200).

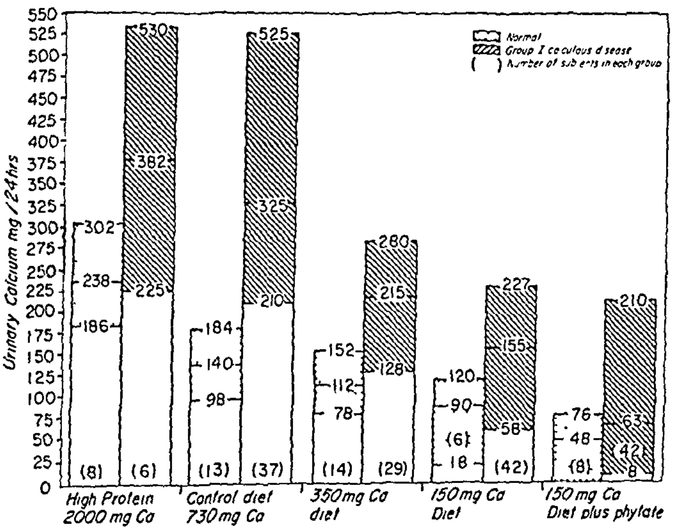

Fig. 2.—Urinary excretion of calcium by patients with actively forming calculi and by normal subjects after 14 days of various controlled dietary regimens. Shaded area of each bar covers the range of urinary calcium concentrations. Central figure in the shaded area is median value of each group.

Methods

Dietary Regimens (table 1).—The dietary programs were prepared by the special diets section of the department of dietetics, whose members instructed the patients with regard to the dietary program at the initiation of the study and during subsequent visits to the outpatient department.

Sodium Phytate.—The dry powder of sodium phytate (Rencal) was obtained as the neutral salt of sodium inositol hexaphosphate. Phytate solution was prepared by dissolving 450 Gm. of sodium phytate powder in 450 cc. of distilled water, 300 cc. of glycerin, and 6 Gm. of sodium benzoate and by cooling. After complete solution, cherry syrup was added to give a total volume of 3,000 cc. The solution of sodium phytate contained 15% (W/V) of the dry powder, and the initial dosage per 24 hours was 125 mg. of phytate per kilogram of body weight in three divided doses. This was gradually increased, as tolerated by the patient, until the urinary calcium excretion was reduced to 50 mg. in 24 hours or a maximum dose of 200 mg. per kilogram of body weight in 24 hours was reached. In the event that diarrhea or soft bowel movements developed in the initial stages of treatment, dosage was reduced by the patient to a point where no diarrhea occurred. After one week, the dosage was gradually increased to the original prescription.

Urinalysis.—Each patient was given a detailed explanation of the regimen and a mimeographed sheet of instructions for collection of exact 24-hour urine specimens. Urinary calcium[3] and phosphorus[4] determinations were by standard techniques.

Study Program. — A study period consisted of three consecutive days on which 24-hour urine specimens were collected; results were averaged into one value for the purpose of recording data. A minimum of three study periods at weekly intervals were obtained before and immediately after any change in a dietary program. Subsequent study periods were gradually increased to intervals of three to four weeks, depending on the progress of the patient. Patients who were seen in an acute attack of renal colic, pyelonephritis, or hematuria were treated by the methods previously outlined.[1] No urinalyses obtained during this time were included in the present data. After complete recovery from the acute episode, the patient was returned to the study series.

Results

Normal Subjects.—Figure 1 illustrates the "pretreatment" studies of normal persons and patients with calculous disease on self-selected diets. All values are derived from specimens submitted on an outpatient basis and represent urinary calcium excretion under home-life conditions of usual activity and diet. Calcium intake estimated from diet lists submitted by the subjects was within the range of 1,000, plus or minus 200 mg., per 24 hours. No significant dietary variation between the three groups could be detected from these diet lists. The results of variations of calcium intake of the 37 normal subjects are summarized in figure 2.

Patients with Calculous Disease.—The mean calcium excretion of the subjects in group 1 was much greater than either group 2 or normal subjects (fig. 1). The range was also greater not only between members in group 1 but also in period-to-period calcium excretion by the individual subjects. The response of these patients in group 1 to the various dietary regimens is illustrated in figure 2. In all of these illustrations, a minimum of three study periods (nine urine specimens) were averaged as the mean calcium excretion for each individual.

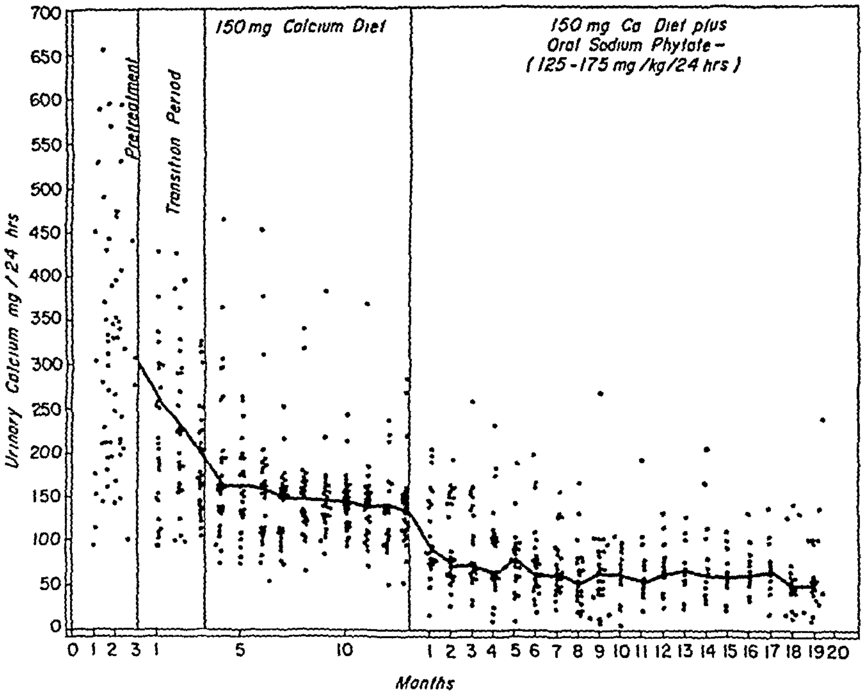

Fig. 3.—Urinary calcium excretion of 19 patients in group 1 (active) and 18 in group 2 (static) on dietary program 4. Each dot is the average of three 24-hour urinary calcium determinations. Solid line is the median value for all subjects examined. No calcified stone formation occurred in these patients.

Response to Orally Given Sodium Phytate and the 150-Mg. Calcium Diet (Diet 4).—Subjects were followed for 3 to 18 months on dietary program 3 prior to beginning program 4. As illustrated in figure 2, patients in group 1 showed much less response to this degree of calcium restriction than did either the normal or the group 2 patients. The individual subjects showed marked fluctuation from study to study, covering the entire range of the variation shown in figure 3. The stability of the mean values on this graph is, therefore, a group response and not typical of the individuals.

Eighteen of 104 patients who were placed on phytate therapy have, at the time of writing, failed to show a satisfactory response to the medication for a variety of reasons. Seven of this group admitted that they were not taking the full dose of phytate because of five to eight soft bowel movements per day. One patient was subsequently found to have an adenoma of the parathyroid gland. One patient who was taking a commercial vitamin preparation which provided 20,000 units of vitamin D daily responded promptly to phytate when the vitamin therapy was discontinued. Five patients stated that they were taking the maximum dose, but three of these were admitted to the hospital for supervised study and showed a prompt reduction in urinary calcium to less than 120 mg. per 24 hours when the dietary intake and medications were carefully supervised. Thus, we have not demonstrated any patient with idiopathic hypercalciuria to be refractory to the sodium phytate, low-calcium diet if it is followed. In the course of our study, there has been no evidence that any patient who responded satisfactorily has become refractory to sodium phytate or has adapted to the low-calcium routine by an increased absorption.

Control Subjects.—The 74 control subjects received diet 2 and were given a dose of one tablespoonful three times daily of the syrup of cherry, glycerin, and water base without the sodium phytate. The mean calcium excretion for the 52 patients who were successfully followed ranged between 250 and 350 mg. per 24 hours for the entire period of observation (fig. 4). The range was 125 to 470 mg. per 24 hours, with 82% of individuals showing a mean calcium excretion above 225 mg. These results thus compare favorably with the pretreatment studies and indicate that the reduction in calcium excretion illustrated in figure 3 is indeed due to the restricted calcium intake plus sodium phytate.

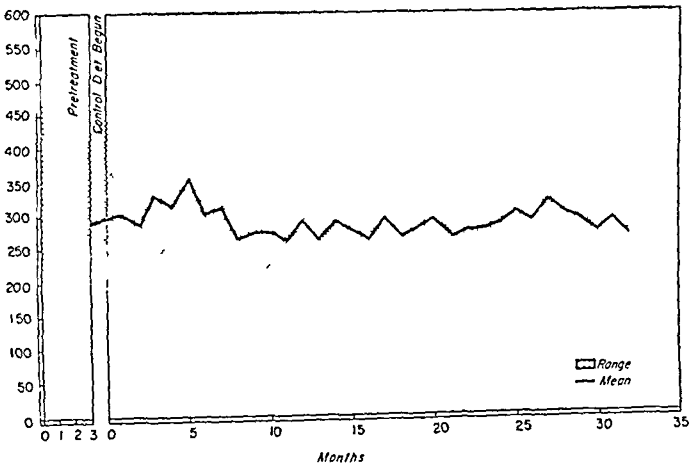

Fig. 4.—Urinary calcium excretion of 30 patients in group 1 and 22 in group 2 on control dietary program no. 2. Solid line is median value for all subjects examined. Fourteen patients formed 38 new calculi and/or increased the size of 6 preexisting calculi during the 32 months of observation.

Calculus Formation.—No valid conclusions as to the efficacy of the low-calcium and oral phytate regimen in the prevention of stone formation can be drawn from the present data, because the many variables do not permit a precise definition of the disease and the categories from this point of view are statistically unsound. It was of interest that no patient showed any regression or disappearance of existing calcified stone in any of the study groups. Five patients on the low-calcium routine who showed good response, as illustrated by mean calcium excretion of 35 mg. per 24 hours, formed calculi composed largely of "matrix material"[5] (fig. 5). These "calculi" were nonopaque to ordinary roentgenography but were found to contain 20 to 50% of inorganic ash. No such "uncalcified stones" were found in the control group. Furthermore, six other patients who were not included in the present study have also been found to form these uncalcified or matrix type of stones. A total of 11 patients have thus been observed with stones of low crystalline content, and the mean calcium excretion of 10 of these patients was 36 mg. per 24 hours with a range of 8 to 70 mg. In the one additional patient whose urinary calcium excretion was 110 to 150 mg. per 24 hours, collection of differential urine specimens revealed a calcium concentration of 4 mg. per 100 ml. from the kidney contain-

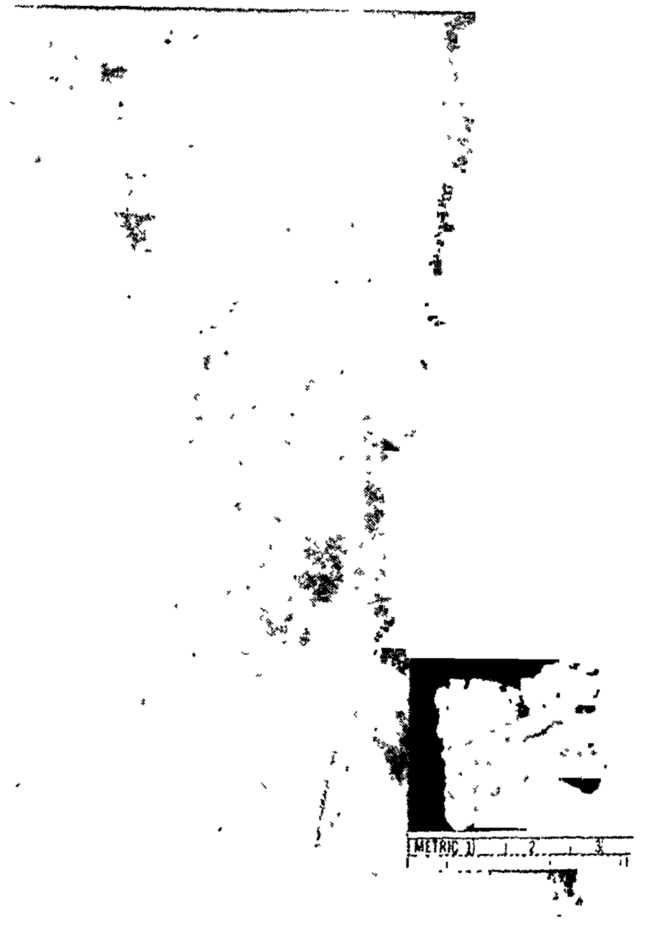

Fig. 5.—Preoperative pyelogram of renal pelvis containing roentgenolucent "matrix calculus." Specimen (insert) removed at operation contained 28% inorganic ash. Patient had had pyelolithotomy for roentgenopaque calcium phosphate calculus prior to institution of dietary program no. 4, during which the matrix calculus formed.

ing the matrix stone and 16 mg. per 100 ml. from the kidney containing no stone, although urine volume was greater from the kidney containing the stone. The incidence of stone formation is summarized in table 2.

Table 2.—*Incidence of Stone Formation*

	Patient Classification			Calculus Formation, No		
	Group 1 (Active), No.	Group 2 (Static), No.	Total	Calcified	Matrix	Total
150 mg. Ca + phytate	24	18	42	5	5	10
Control, 730 mg. Ca.	30	22	52	14	0	14
Lost to follow up	6	48	54	...	...	...

Calcigerous stone formation occurred in five patients, initially group 1 patients, while they were on the low-calcium and oral sodium phytate regimen. These were not included in figure 3, but the urinary calcium excretion is shown in figure 6.

Report of Cases

Case 1.—A 44-year-old man had formed small calcium oxalate stones repeatedly for a period of 12 years. He had had one pyelolithotomy and, at the time the study began, had multiple small calculi in both kidneys. X-ray studies were made over a three-month period, during which time he was under observation for possible parathyroid adenoma or metabolic disease. During this time he maintained a urinary calcium excretion level consistently above 500 mg. per 24 hours, but there was no increase in the size of existing calculi or any new stone formation. During the pretreatment period he was admitted to the hospital for complete balance studies. No definite biochemical or roentgenographic evidence of parathyroid or other disease was found. He was started on the sodium phytate therapy in a dosage of 125 mg. per kilogram of body weight per 24 hours, with the response illustrated in figure 6. He had some diarrhea with this dosage and had not shown a completely satisfactory response at the time that his first follow-up x-ray was made. The formation of a large stone in the left kidney had undoubtedly occurred since the beginning of the phytate treatment. The phytate dosage was increased to 200 mg. per kilogram of body weight per 24 hours. The calculus passed into the middle third of the left ureter where it became fixed, and was removed by ureterolithotomy. Readmission to the hospital with repeat study was done. Response to the intravenous calcium test[6] revealed an elevation of the serum phosphorus level by only 0.6 mg. per 100 ml. as compared with a serum calcium elevation from a concentration of 11 to 14.6 mg. per 100 ml. A phosphate deprivation test was carried out, and the tubular reabsorption of phosphate[7] was found to be 67%. Exploration was done on April 23, 1957, and a large parathyroid adenoma was removed.

Case 2 and Case 3.—These patients were two women, aged 32 and 38 years respectively. Each had experienced repeated formation of calculi in both kidneys since the ages of 16 and 24. It was of interest that routine urine specimens submitted prior to the onset of renal colic showed a marked rise in urinary calcium excretion. The attack of renal colic occurred at the points illustrated by the symbols for diagnostic x-ray in figure 4. Both patients admitted that they had abandoned their diets and partially discontinued the phytate medication during the period prior to stone formation. After removal of the calculi, each showed a satisfactory response to therapy and no subsequent formation of calculi.

Case 4.—A 48-year-old man has been seen at this hospital since the age of 24 years with recurrent bilateral calcium phosphate stones. A total of 14 operations, 6 pyelolithotomies and 8 ureterolithotomies, had been done with many cystoscopic extractions of calculi. Proteus mirabilis and P. rettgerii were resistant to all available therapy. At the time of introduction of the low-phytate routine, the patient had no calculi in the urinary tract. He then formed roentgenolucent matrix calculi which blocked the renal pelves and required bilateral nephrostomy. Eight months after nephrostomies were established, he formed a large calcified stone in one renal pelvis, and, since this is nonobstructing, no operative procedure has been done.

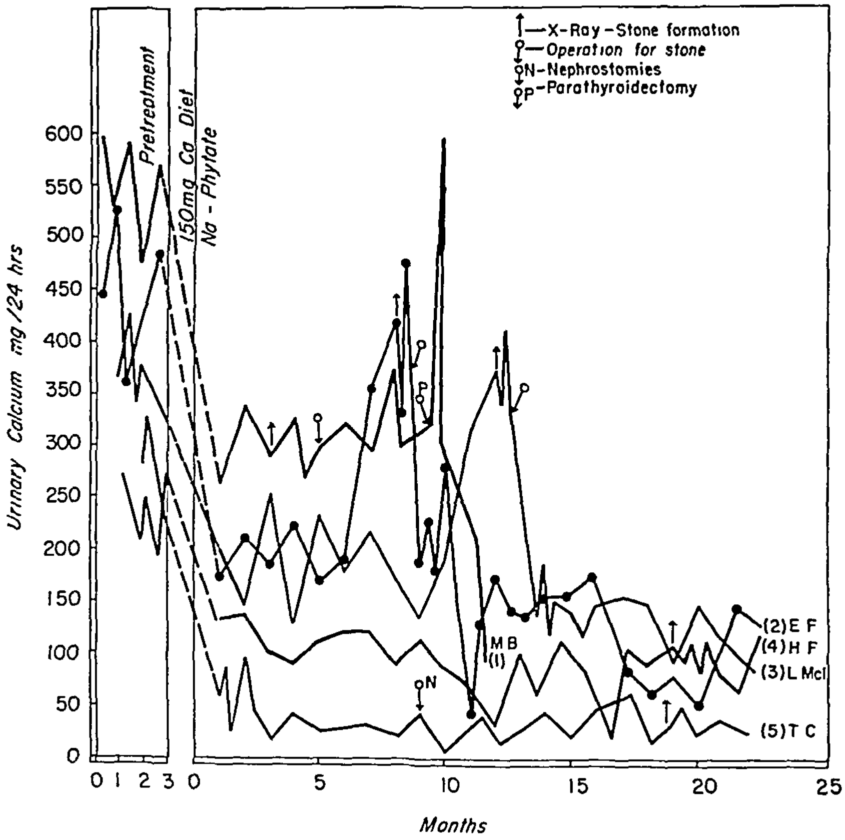

Fig. 6.—Urinary calcium excretion of five group 1 patients who formed calcigerous stones while on dietary program no. 4. Patient in case 1 responded to program after removal of parathyroid adenoma. Patients in cases 2 and 3 abandoned program before calculus formation occurred. In patient in case 4 the size of existing urinary calculus increased, and that in case 5 new calculus formed in spite of persistently low urinary calcium excretion.

Case 5.—A 34-year-old woman had had bilateral operation for correction of a horseshoe kidney and repeated bilateral calculus formation for a period of 16 years. She had positive urine cultures for P. rettgerii and had nonobstructing calculi in both kidneys at the time this study was begun. In the period between Dec. 4, 1955, and March 10, 1956, the stone in the right kidney was found by roentgenography to be increased to approximately three times the previous width, although urinary calcium excretion had been consistently low. No increase was noted in the size of the stone in the left kidney. This patient and that in case 4 have been repeatedly examined for biochemical or roentgenographic evidence of parathyroid or metabolic disease, with consistently negative results.

These brief histories indicate that calculus formation in three of the above patients cannot be attributed to failure of the phytate regimen, since one had a parathyroid adenoma and two failed to remain on the program. Of the two remaining patients, both had bilateral renal pelvic and calyceal dilatation with Proteus infection. It is a moot question whether the rate or rapidity of stone growth in these patients was influenced by the program.

Comment

The present studies have confirmed the previous observations by Flocks[8] that patients with idiopathic urinary calculi absorb from the intestine and excrete in the urine a much greater quantity of calcium than persons who have never formed stones. Flocks also observed that an increased calcium intake, high-protein diet, and exogenous vitamin D markedly increased absorption of calcium in stone-forming patients and to a much greater degree than in normal individuals. As in Flocks' series of studies, we have been unable to demonstrate bone disease in these patients by roentgenographic or biochemical studies, nor has demineralization of bone become apparent, although the patients were on restricted calcium diets for two or more years. Recent studies of renal function by the clearance techniques[9] offer good evidence that impairment of renal function in calculous disease is secondary to mechanical obstruction and infection and is not a prerequisite to formation of the calculus. Thus, in the absence of either bone or renal disease a sustained hypercalciuria can be due to, and supported by, only one condition—increased intestinal absorption. This is in accord with the Neumans' first postulate[10] that some active mechanism ("ion-pump") must exist for the absorption of calcium from the gastrointestinal tract. In the patient with calculous disease, the ion-pumps exceed the apparent need for calcium. The burden of maintaining the long-term balance under these circumstances rests upon the kidneys, since the bone cannot accept the excess calcium ad infinitum and the intestine has no excretory mechanism for it.

A low calcium intake plus oral sodium phytate will reduce the intestinal absorption of calcium to less than normal levels for many months without obvious deleterious effects. This may be beneficial in the prevention of calculus formation in the urinary tract, particularly in those patients who frequently form small calcium oxalate stones. It is conceivable that the quantity of matrix material in these patients is small enough to pass without obstructing the flow of urine, provided crystal deposition can be prevented. Patients with large quantities of matrix may form roentgenographically nonopaque or uncalcified matrix stones.[11] Under certain circumstances, perhaps Proteus infections, this matrix will calcify with extremely low concentrations of urinary calcium. It should be noted that two patients who formed matrix calculi had infection with Proteus organisms; furthermore, 7 patients on the low calcium and phytate routine and 10 on the control regimen had infections due to Proteus organisms but did not form calculi.

The possible complications of long-term phytate therapy and the contraindications for its use have been carefully reviewed.[12] Demineralization of bone in patients of the type presented here is not considered a likely complication. The normal kidney can conserve calcium by reducing the urinary excretion to near zero in periods of deprivation[13]; hence, a mean urinary calcium excretion of 50 mg. per 24 hours would indicate a margin of calcium which could still be retained if it were required. Since there are 1,200 Gm. of calcium in the adult skeleton and osteoporosis is ordinarily noted by x-ray when 40% of this is depleted, a negative calcium balance of 100 mg. per day would require 13 years to produce roentgenographic changes similar to clinical "senile osteoporosis." No complications of oral phytate administration have been observed up to the present time, but these subjects were carefully selected. Patients with a history of hemorrhagic diatheses or disease which might result in blood loss (peptic ulcer) were eliminated from the study. No patient with impaired cardiac function was given sodium phytate, since the increased sodium absorption and potassium excretion might precipitate cardiac failure. Patients with advanced renal disease have not received phytate lest retention of phosphate occur. Patients were carefully screened for hyperparathyroidism and other conditions causing bone disease prior to beginning the therapy.

Summary

Patients with "idiopathic" renal calculous disease in the active stages exhibit a significantly elevated urinary calcium excretion on diets which contain as little as 350 mg. of calcium per 24 hours. They have neither bone nor renal disease in the initial stages of calculus formation. The increased renal excretion of calcium is a result of increased intestinal absorption, and many factors (high calcium, high protein, and high vitamin D intake) greatly accelerate the calcium absorption of these patients.

Hypercalciuria is not the sole etiological factor in calculus formation but is only one aspect of a metabolic derangement which has not been defined. Until such time as the entire process can be delineated it seems feasible to attempt the prevention of recurrent stone formation by reduction of calcium intake and absorption.

Sodium phytate forms an unabsorbable complex with calcium in the intestinal tract. When administered orally with a low-calcium (150 mg. per 24 hours) and low–vitamin D diet, it effectively reduces the urinary excretion of calcium to quantities unobtainable by any tolerable diet alone. No complications from or adaptations (resistance) to the low-calcium and oral sodium phytate routine have been observed in patients who have been followed for more than two years. In selected patients who are carefully followed, this program appears to be relatively safe and generally beneficial in the prevention of urinary calculus formation. It may not be without danger to the patient with advanced renal disease, bone disease, heart disease, hemorrhagic diatheses, or hematopoietic disease. Neither will it prevent stone formation in every patient who has a calcifiable matrix in the urine, particularly in the presence of infection with Proteus organisms.

The low-calcium, low–vitamin D, and oral sodium phytate regimen appears to be of value in (1) differentiation of idiopathic hypercalciuria from metabolic or bone disease, (2) preoperative preparation of patients with renal calculi (particularly of the large "staghorn" variety [1]), and (3) postoperative prevention of recurrent calculus formation.

This investigation was supported by a research grant from the National Institute of Arthritis and Metabolic Diseases of the National Institutes of Health, Department of Health, Education and Welfare, and by grants-in-aid from the Mary Reynolds Babcock Foundation and from the Squibb Institute for Medical Research.

The sodium phytate powder used in this study was obtained as Rencal through the courtesy of Dr. Douglas B. Remsen of the Squibb Institute for Medical Research, E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corporation, New York.

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CHRONIC DISSEMINATED TUBERCULOSIS.—Chronic disseminated tuberculosis is a prolonged disease which involves several organs of the body. It is not easily recognized. Any person with prolonged undiagnosed fever, weight loss and positive tuberculin deserves a trial with anti-tuberculosis drugs. Eleven cases are presented to illustrate the multiple organ involvement in chronic disseminated tuberculosis and the results obtained with antituberculosis drugs. Treatment of this disease must be generalized and prolonged. Residuals in involved organs after prolonged drug administration should be treated by procedures recommended by appropriate experts.—Col. E. A. Cleve, M. C., U. S. Army, R. V. Young, M.D., and Amadeo Vicente-Mastellari, M.D., Chronic Disseminated Tuberculosis, *Diseases of the Chest*, December, 1957.

J.A.M.A., March 29, 1958

REHABILITATION OF PERSONS WITH BILATERAL AMPUTATION OF LOWER EXTREMITIES

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and
Sung J. Liao, M.D., *Boston*

The effectiveness of a program of rehabilitation was studied in 50 patients with bilateral amputation of lower extremities. The average age was 55 years, and the reason for amputation was peripheral vascular disease in 34 cases. The rehabilitation program included preprosthetic training, instructions in activities of daily living, prevocational evaluation and guidance, and job placement when indicated. Failures were explained only in part by the presence of severe medical complications. Age, primary etiology, and site of amputation were found, by systematic analysis, to have no direct bearing on the likelihood that a given patient would become self-sufficient. Motivation appeared to be a contributing factor. Thirty-five patients were considered rehabilitated, and 16 of these became economically independent.

The loss of both lower extremities through amputation represents one of the severest physical handicaps, particularly as it occurs most commonly in the older age group. During the last six and one-half years, from May, 1950, through December, 1956, over 500 persons with amputation of a lower extremity were admitted to the Bay State Medical Rehabilitation Clinic. Of these, 10% had bilateral amputations, and the present study deals with the end-results of rehabilitation in this group of patients. Of these 54 patients, 50 completed appropriate treatments and have been followed up for end-results.

Case Material

Age and Etiology.—The average age of the 50 patients was 55. Of these, 41 were men, with an average age of 56, and 9 were women, with an average age of 52. As might be expected in this age group, etiology was most commonly that of peripheral vascular disease, usually arteriosclerosis, although a few cases of thromboangiitis obliterans were included. In 29 men, with an average age of 60, and 5 women, with an average age of 65, the etiology was peripheral vascular disease. The average age of these 34 patients was 61 years. In 12 men, with an average age of 46, and 4 women, with an average age of 38, the etiology was trauma and miscellaneous causes. The average age of these 16 patients was 43 years. The primary etiological causes of amputation were arteriosclerosis, 60%; diabetes mellitus, 38%; thromboangiitis obliterans, 8%; trauma, 25%; and miscellaneous, 6%.

Site of Amputation.—There were 31 patients, with an average age of 59, who had bilateral amputations above the knee, and 8, with an average age of 48, who had bilateral amputations below the knee. Eleven patients, with an average age of 52, had one amputation above and one below the knee. Table 1 shows the relationship between site of amputation and the etiology.

Training in Use of Prostheses.—The amputees were given training in the use of prostheses in our clinic. The patients with amputations above the knee started with bilateral pylons or short nonarticulated prostheses for training purposes and later used long standard above-knee prostheses. As the artificial limbs were often prescribed elsewhere, we did not have control of this entirely, and so some patients started immediately with bilateral long limbs. The number of visits required for training indicates that the longer the prostheses the greater the number of training periods necessitated. The 21 patients who used bilateral pylons required an average of 16 visits, the 10 who used bilateral above-knee prostheses required 31, the 10 who used one above-knee and one below-knee prostheses required 27, and the 8 who used bilateral below-knee prostheses required 21 visits for training purposes.

Rehabilitation Results.—A grading table was used to measure degree of rehabilitation. Those persons in grades A and B (table 2) were considered to be successfully rehabilitated from an economic point of view. Those in grades C and D were considered rehabilitated, although not employed—usually because of age and general physical condition. The failures in rehabilitation received grades E, F, and G. From the tabulation of end-results, it can be seen that 30% of the patients became economically independent and that 70% were considered rehabilitated. Fifteen patients, or 30% were considered failures.

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Read before the Section on Physical Medicine at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

The relationship between end-result and age is noted in table 3 and the relationship between end-result and site of amputation in table 4. It is, perhaps, surprising to note the number of successful rehabilitations among the older age groups and also in those with bilateral above-knee amputation sites. As would be expected, there were successes and failures in both the group with peripheral vascular disease and the group with trauma and miscellaneous ailments. There were 23 successes and 11 failures in the former group and 12 successes and 4 failures in the latter. This indicates that some factor other than age, etiology, or site of amputation determines the end-results as far as rehabilitation is concerned.

Table 1.—*Relationship Between Etiology and Site of Amputation*

Etiology	Site of Amputation* AK-AK	 AK-BK	 BK-BK	Total Patients
Peripheral vascular disease	28	4	2	34
Trauma and miscellaneous causes	3	7	6	16
Patients, no.	31	11	8	50

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* AK refers to amputation above and BK to amputation below the knee.

Some thought was given to the idea that perhaps the interval of time between operation and rehabilitation was the determining factor. There were 24 successes and 8 failures in the group for whom the interval of time between operation and rehabilitation was less than 1 year, 9 successes and 4 failures when the interval was 2 to 5 years, and 2 successes and 3 failures when the interval was 5 to 36 years. The number of successes and failures was not related to the factor of time of starting rehabilitation.

Table 2.—*Results of Rehabilitation Program*

Results	Rehabilitation Grade	Patients, No.	% of Total Patients
Gainfully employed*	A	10	20
Homemaking; spouse employed*	B	5	10
Employable but not placed	C	6	12
Independent in activities of daily living but unemployable	D	14	28
Rehabilitated, total	A, B, C, D	35	70
Partial independence in activities of daily living and unemployable	E	5	10
Use of wheel chair necessary	F	7	14
Died during rehabilitation	G	3	6
Failures, total	E, F, G	15	30

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* Economically independent.

Types of Prostheses

For training purposes for patients with bilateral amputation above the knee, training pylons are often used. These are short nonarticulated prostheses. They are constructed with willow sockets, usually for ischiatic weight bearing and with muscle contour, with pelvic band suspension, and with either a single or double swivel two-way hip joint. There are no knee joints. Occasionally ankle joints are included, with a balancing platform instead of a foot that has toes extending in reverse direction. The latest development in this type of prosthesis is the incorporation of quadrilateral socket fit, providing better control of the limb.

Long above-knee prostheses were manufactured from willow sockets of the same shape and the same suspension as those used for pylons. Standard knee joints were utilized, with the exception of an occasional case when a knee lock was necessary. In one instance a patient came to us with two temporary long limbs consisting of laced-leather thigh corsets, drop ring locks for the knees, and shoulder suspension. The patients with amputations below the knees were, with one exception, given standard below-knee prostheses. In one case, experimental suction sockets were provided and were very successful.

Analysis of our cases revealed that the factors of age, etiology, or amputation site were not the most significant factors in rehabilitation end-result, nor was the interval between surgery and prosthetic training. Because of the small numbers of patients involved, these conclusions cannot be drawn with entire satisfaction. Our experience indicates, however, that when patients were given equal opportunity for rehabilitation, success seemed most dependent on motivation. Unfortunately, this factor could not be predetermined and was not measurable except through clinical judgment.

Table 3.—*Rehabilitation Results According to Age of Patient*

Age Group	Successes per Grade, No. A	 B	 C	 D	Failures per Grade, No. E	 F	 G	Total Successes	Total Failures
20-30..........	1							1	
30-40..........	2							2	
40-50..........	2	1				2		3	2
50-60..........	2			1			1	3	1
60-70..........	1	2	2	4	2	1	1	9	4
70-80..........	2	1	3	8	2	3	1	14	6
80-90..........		1	1	1	2	1		3	2

Comment

It may be emphasized that this group of patients were mostly elderly individuals, who are generally considered poor candidates for training in the use of prostheses. Sixty per cent had arteriosclerotic changes and had bilateral amputations above the knee. The amputations due to trauma were mostly below the knee or combinations of above and below and occurred in patients with a wide range of ages. In spite of these handicaps, 70% of the entire group became independent, at least in self-care, and 30% achieved economic independence. If the three patients who died during the course of rehabilitation are excluded, rehabilitation figure would be 75%.

Our rehabilitation program consisted in preprosthetic training, instructions in activities of daily living, prevocational evaluation and guidance, and, finally, job placement when indicated. Our minimal goal, in general, was self-sufficiency in self-care of the patient by using prostheses so that the family members could be free to carry on their own routine. In the younger patients, and whenever possible in others, we attempted to achieve employment as a goal. As a result of our study, we intend to prescribe prostheses and institute appropriate rehabilitation programs in the future for more patients with amputation of the lower extremities whenever they are motivated and regardless of age.

Table 4.—*Rehabilitation Results According to Site of Amputation*

Location of Amputation	Successes per Grade, No.				Failures per Grade, No.			Total Successes	Total Failures
	A	B	C	D	E	F	G		
Bilateral, above knee	5	3	4	10	2	4	3	22	9
One above and one below knee	2	1	1	2	2	3		6	5
Bilateral, below knee	3	1	1	2	1			7	1
Total	10	5	6	14	5	7	3	35	15

Summary

During a six and one-half year period (May, 1950, through December, 1956), 50 patients with bilateral amputation of lower extremities were treated and followed up at the Bay State Medical Rehabilitation Clinic, Boston. On admission, one-half of them were over 60 years of age, with an average of 55 years for the entire group. There were 41 men and 9 women. There were 31 patients (62%) with bilateral amputations above the knee, 8 (16%) with bilateral amputations below the knee, and 11 (22%) with amputations both above and below the knee. Most of the arteriosclerotic patients were elderly and had bilateral amputations above the knee.

After appropriate training programs, 70% of the patients were considered rehabilitated, with 30% becoming economically independent. The effects of age, primary etiology, and site of amputation on the outcome of rehabilitation were analyzed. It seemed that these had no direct bearing on the patient's potentiality to become self-sufficient in activities of daily living. Lack of motivation and presence of severe medical complications were most likely the contributing factors in the failures.

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CLINICAL NOTES

IMMUNIZATION AGAINST TETANUS AND DIPHTHERIA WITH SPECIAL COMBINED TOXOID

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and
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Childhood immunization against diphtheria and tetanus has been established as a desirable and effective procedure. Ipsen[1] has recently clearly reemphasized the need for the continuance of this important immunization program into the older children and adult groups. Unfortunately, the frequency of severe local and systemic reactions to diphtheria toxoid injection in older children and adults has prevented widespread usage of this proved procedure. Many physicians have observed such reactions even after using the Schick test to determine the susceptibles in the group. Moreover, such screening procedures are inconvenient and cumbersome when one is dealing with large numbers of persons.

Extensive studies by Edsall and his colleagues[2] have indicated that a satisfactory combined tetanus and diphtheria toxoid for adults could be produced and used, provided that the diphtheria toxoid was highly purified and used with an adjuvant. With such a toxoid a satisfactory primary immunization was obtained by giving two injections spaced four weeks apart, followed by a third dose 6 to 12 months later. The response to this combined toxoid when used for booster doses was found to be completely satisfactory. As a result of these studies the National Institutes of Health, U. S. Public Health Service, have established minimum requirements for the combined toxoid which is officially named tetanus and diphtheria toxoids combined precipitated, adsorbed (for adult use).

From the Contra Costa County Health Department and Cutter Laboratories. Dr. Graham is now with the Bureau of Maternal and Child Health, Los Angeles County Health Department.

Although this product has been used routinely in the U. S. armed forces since 1955, it has only recently become available through normal channels to physicians. In this report we describe our clinical experience and the diphtheria antitoxin response in a group of 62 older adults (employee volunteers from the Contra Costa County Health Department), each of whom received two injections of this combined toxoid.

Number of Local and Systemic Reactions to Injections of Combined Toxoid in Sixty-two Older Adults*

Injection	Local Reactions†			Systemic Reactions†		
	None	Mild	Moderate	None	Mild	Moderate
First	34	26	2	42	19	1
Second	36	23	3	42	18	2

* The four persons who had moderate reactions ranged in age from 31 to 41 years.

† There were no severe reactions, either local or systemic.

Methods and Procedures

The preparation (Adult Dip-Tet) used was prepared in accordance with the specifications contained in the National Institutes of Health Minimum Requirements: tetanus and diphtheria toxoids combined precipitated, adsorbed (for adult use). Both toxoids were purified by alcohol fractionation methods, and the diphtheria component had a purity of greater than 1,500 Lf per milligram of nitrogen. The toxoids were completely adsorbed on aluminum hydroxide (Alhydrox diphtheria toxoid), and the final product contained 2 Lf of diphtheria toxoid per single dose. The preservative used was thimerosal 1:10,000.

The dosage schedule consisted of two 0.5-cc. injections given subcutaneously four weeks apart. Blood samples were obtained prior to each injection and four weeks after the last injection. After the final bleeding an intradermal test using 0.1 cc. of a 1:100 dilution of regular fluid diphtheria toxoid was done to determine the number of persons hypersensitive to this toxoid.

Local and systemic reactions were evaluated at 48 hours and were rechecked later by personal contact by one of us (B. S. G.). Local and systemic reactions were graded using the criteria described by Pappenheimer and others.[3]

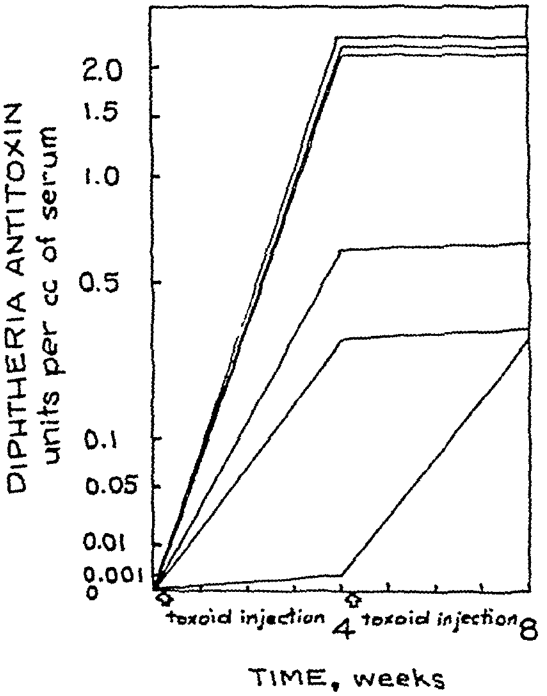
Local reactions were classed as mild if the local erythema was less than 4 cm. Moderate local reactions included those with erythema 4 to 8 cm. in diameter, and severe reactions included those greater than 8 cm. in diameter.

Systemic reactions were classed as mild when the temperature rise was less than 1 F and where only slight malaise, headache, or anorexia was noted. Moderate systemic reactions included those with temperature rise of 1 to 2 F and with complaints of malaise, headache, generalized aching, chilly sensations, anorexia, or nausea. Severe reactions were those with temperature rise greater than 2 F and with increased severity of the various symptoms listed above.

Results

The table shows that no severe local or systemic reactions were encountered following either of the immunizing injections. Two of the 62 persons showed a moderate local reaction after the first injection, and one of these had a moderate systemic reaction. Following the second injection three persons had a moderate local reaction, and two of these had an accompanying moderate systemic reaction. The mild reactions were all trivial and in our experience reflect the usual incidence expected with close observation of the group.

Diphtheria antitoxin titrations were performed on all of the bloods obtained from 10 of the persons selected at random. In each instance when the preinjection titer was low, there was a tenfold to one-thousand-fold increase in antitoxin titer. The remaining 52 preinjection serums were screened to determine which persons initially had less than 0.0015 units per cubic centimeter and would therefore be considered susceptible.



Diphtheria antitoxin response in six persons with initial titers less than 0.0015 units per cubic centimeter.

Six such persons were found, and their postinjection diphtheria antitoxin titers are shown in the figure. These results show that five of the six persons with no demonstrable antitoxin responded promptly as if this were a booster injection. In one person an immune level was not reached until four weeks after the second injection. None of these six nonimmune persons had any significant reaction to the immunization procedure.

Comment

The satisfactory clinical experience in this group appears to be equal to or even more favorable than other studies of this nature. Pappenheimer and others[3] reported the frequency of local and systemic reactions following 5 Lf doses of diphtheria toxoid. In a group of 1,180 persons they encountered moderate or severe local reactions in approximately 8% of the persons and moderate or severe systemic reactions in 3%. Less than 10% of their group were over 35 years of age in contrast to our study in which 65% were over 35 years.

In another report Edsall and others[2] noted four moderate reactions and one severe local reaction in a group of 75 persons injected with 1 Lf of diphtheria toxoid adsorbed on aluminum phosphate. Two severe systemic reactions were also observed.

Our studies on diphtheria antitoxin response indicate that all 62 adults developed a good, solid immune status in response to two injections. These results are consistent with those reported by others. Edsall and others[2] have reported the antitoxin response to 2 doses of 1 Lf of diphtheria toxoid given three weeks apart and then a third dose given five months later. In their report the persons with titers less than 0.003 units per cubic centimeter were classed as susceptible and would be expected to show a positive reaction to the Schick test. Those with titers between 0.003 and 0.03 units per cubic centimeter would have borderline immunity, and those with titers over 0.03 were considered as solidly immune. They found that in a group of 252 young adults the number of subjects solidly immune after two basic doses of toxoid had increased from 32% to 83%. Three weeks after the third dose, over 99% had achieved a solid immunity status.

Our experience with this new combination of tetanus and diphtheria toxoids in 62 older adults has been completely confirmatory of previous reports. Our results show that the 2 Lf dose of highly purified diphtheria toxoid is acceptable from the clinical viewpoint, and we encountered no troublesome severe local or systemic reactions. The observed diphtheria antitoxin responses were excellent and are consistent with previous reports. These results show that the excellent childhood immunization program can be extended into adolescence and adulthood without fear of excessive reactivity and with confidence that good antitoxic immunity will be obtained.

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ACUTE INTERMITTENT PORPHYRIA WITH CONVULSIONS

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and
Horace Verde, M.D., Chicago

This case of acute intermittent porphyria is presented because of the occurrence of convulsive seizures as the only neurological manifestation, as well as several other unusual features. The porphyrins are pigments composed of four pyrrole rings connected by four methane bridges. These pigments are fundamentally related to cellular metabolism and are present in pure or bound form in both plant and animal life. Porphyrins are present in respiratory pigments such as hemoglobin, chlorophyll, cytochrome, and catalase. They occur in the pure state in the central nervous system in man. Porphyrins are excreted in the urine normally in amounts of 5 to 10 mcg. per day. There is an excessive excretion of the pigment in porphyria. An abnormal porphyrin metabolism is the basis of the clinical syndrome of porphyria.

There are three types of porphyria: the congenital, the acute intermittent (under consideration here), and the mixed or chronic form. Acute por-

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phyria is sometimes precipitated by barbiturates, alcohol, sulfonamides, and arsenic. In most cases however, no immediate cause is found. All signs of chemical abnormality may be absent during the period of remission. Usually there are no cutaneous manifestations in acute porphyria. This is in contrast to the congenital or chronic form. Acute porphyria is more common in women and is characterized by episodes of intermittent acute abdominal, neurological, and mental symptoms followed by an asymptomatic period. This syndrome and the chronic form are sometimes grouped under the term "porphyria hepatica," because the liver in these cases is principally responsible for the abnormal formation of porphyrin.

Report of a Case

A 39-year-old married woman with three children was admitted to the medical service June 7, 1957, with symptoms of constant epigastric pains of 10 days' duration, accompanied by 10 days of vomiting and 12 days of constipation. Her abdomen was distended and she had not moved her bowels for 12 days prior to admission. She had a history of digestive disturbance after meals for many years. She had had a cholecystectomy 18 months previously and also a surgical intervention for "adhesions." At the age of 17 she had an appendectomy and a partial oophorectomy. She had had a ruptured intervertebral disk 10 years previously.

The patient had been restless for several weeks prior to onset of symptoms and had been taking excessive amounts of glutethimide (Doriden), which she said that she "took like candy." Physical examination revealed a well-nourished, well-developed woman who was vomiting while being examined. There were no abnormal physical findings except for a distended abdomen and moderate epigastric area spasm. There were normal bowel tones. The neurological examination disclosed no abnormal findings except for hyperactive but equal deep reflexes. During this time she mentioned that she had had tingling of the lower extremities for the past four months.

While in the hospital, the patient continuously complained of epigastric pain and continued to vomit at frequent intervals. On the second day she had a grand mal seizure. This was followed by two similar seizures on the third day. These were generalized convulsions with tonic-clonic phases, with foaming at the mouth and biting of the tongue. On regaining consciousness she was transferred to the neuropsychiatric ward. When interviewed the patient appeared markedly tense and restless and was tossing in bed. She said she had been nervous since she was married. She depreciated herself and said she was an inadequate mother. Her husband and two sons, aged 11 and 17 years, "were so good," and she was in the hospital instead of taking care of them. She was worried about her 11-year-old son's clubfoot, which needed several corrective operations. The patient was very attached to her father, whom she described as very emotional, at times affectionate and other times cruel. She felt guilty about having envied her prettier sister and blamed herself for her sister's chorea. There was no history of convulsive seizures.

The urine was positive for porphyrin and was negative when the patient was in a state of remission. Complete blood and liver function tests were done, but only cephalin cholesterol flocculation was of note (2+). The electroencephalogram showed diffuse or diencephalic dysfunction with no evidence of an irritable focus. Therapy consisted of 25 mg. of chlorpromazine four times a day. The patient made a complete clinical recovery, and the urine findings for porphyrins were then negative. She was cheerful and functioned normally in ideation and emotion.

Comment

This case is of interest because only convulsive seizures were present as neurological symptoms, in contrast to very grave neurological symptoms that are at times encountered. Patients may present symptoms simulating polyneuritis, poliomyelitis, and encephalitis. Our case is similar to that reported by Smeed.[1] His patient was admitted because of severe pain in the right upper quadrant of three months' duration, vomiting, and marked constipation. Phenobarbital was taken for about 10 days prior to admission. She had a grand mal seizure followed by four more during 24 hours. There were no neurological findings. Urine tests confirmed the diagnosis of acute porphyria.

The other interesting feature of this case is ingestion of glutethimide, a nonbarbiturate, in excessive amounts. Although alcohol, barbiturates, sulfonamides, and arsenic have been reported as agents precipitating symptoms,[2] glutethimide has not thus far been implicated.

Our patient recovered while under chlorpromazine treatment, but we believe that this treatment was coincidental rather than causative. Others have reported remissions after chlorpromazine therapy.[3]

Had mental symptoms occurred without the diagnosis of porphyria, electric shock therapy might have been considered. In fact others have given electric shock therapy in the presence of the diagnosis of porphyria.[4] This, in our opinion, is not a rational therapy in view of the organic cause, and moreover convulsive seizures may occur spontaneously, as in our case. Porphyrins should also be considered in the differential diagnosis of the convulsive states, as well as mental disorders classified as functional.

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DIAGNOSTIC PROBLEMS

VOMITING AND JAUNDICE IN PREGNANCY

Clinical Pathologic Conference (PM 412-57), May 2, 1957, from the Department of Pathology and the Hektoen Institute for Medical Research of Cook County Hospital, Chicago, presented for publication by Daniel S. Kushner, M.D., and Paul B. Szanto, M.D.

Clinical Data and Discussion

Dr. Edmund F. Foley: A 15-year-old girl was admitted to the Cook County Hospital on Feb. 27, 1957, in the 14th week of her first pregnancy, having had her last menstrual period Oct. 29, 1956. The patient had been well until two and a half weeks before admission, when she developed anorexia, increasing nausea, singultus, and persistent vomiting of blood-tinged watery material. She also complained of headache, dizziness, weakness, sore throat, pyrosis, shortness of breath, and "dyspepsia" with an oppressive feeling in the chest and abdomen. The menstrual history had been normal from the age of 13. She knew of no allergies.

Physical examination revealed an acutely ill, well-developed, moderately well-nourished girl in acute distress from singultus and hematemesis (benzidine test 4+). Her skin was warm and dry; tissue turgor was poor. Her temperature was 100 F (37.8 C), pulse rate 138, and blood pressure 114/56 mm. Hg. Her sclerae were subicteric. Her nasal mucosa appeared reddened. Her oral mucosa was dry; her pharynx was injected, and a thick mucoid postnasal discharge was noted. Carotid pulsations were prominent, as if she had empty arteries or dynamic heart action. Her heart was not enlarged, but a harsh grade 2 systolic murmur was heard at the apex and well transmitted to the base; the heart tones were of good quality; and sinus tachycardia was present. Her abdomen was flat and soft. A blunt, firm, tender liver edge was palpated 3 or 4 fingerbreadths below the costal margin. Right costovertebral angle tenderness was noted. Her uterus was enlarged to the size of a 14-week gestation; the fundus was poorly defined. Bowel sounds were active. Pelvic examination revealed a soft cervix with a large erosion, intact mucus plug, and normal adnexae.

Urinalysis revealed a specific gravity of 1.013, albumin 1+ to 0, sugar 0 to 1+, acetone 1 to 4+, urobilinogen 3 to 1+, and the sediment contained 5 to 50 leukocytes, 2 or 3 epithelial cells, and 2 to 4 yeast cells per high-power field. The hemoglobin level ranged from 70 to 59%, falling gradually as a result of the patient's illness, in spite of four blood transfusions. The erythrocyte count was 3,760,000 and 3,580,000 per cubic millimeter and the leukocyte count 13,100 to 21,000. No differential count was done. The blood Kahn test was negative. An electrocardiogram revealed sinus tachycardia, 107 beats per minute; PR interval 0.17 seconds, QT interval 0.36 seconds; intermediate electrical axis and nonspecific T-wave changes. Bacteriological culture of vaginal discharge revealed Escherichia coli. Blood and stool cultures were repeatedly negative. For biochemical data see the table.

The patient's fever was prominent and sustained, initially ranging between 100 and 103 F (37.8 and 39.4 C). Perhaps she had dehydration fever, but we see that most commonly in children. In adults, it is a good rule that fever is not the result of dehydration but that both stem from a common cause. Supportive therapy consisted of intravenous infusions of dextrose and water and 2 or 3 liters a day of saline solution, potassium chloride, belladonna, ascorbic acid, thiamine, promethazine hydrochloride, phenobarbital, chlorpromazine hydrochloride, and promazine hydrochloride. Whole blood transfusions eventually totaled 2,000 cc. Urinary output remained good. The patient's blood pressure ranged from 112 to 150 mm. Hg systolic over 60 to 40 diastolic. On the first day, 1,200,000 units of penicillin were given; 1 Gm. of tetracycline was given intravenously from the 2nd to 4th days; 2 Gm. of streptomycin was given intramuscularly, and 400 mg. of erythromycin was given daily from the 4th to the 8th days; 1,200,000 units a day of penicillin and 2 Gm. a day of streptomycin were given from the 9th to the 17th days; 5 to 10 Gm. of sulfadiazine was given intravenously and 2 Gm. a day of streptomycin was given from the 18th to the 21st days; 200 mg. a day of terramycin was given intramuscularly from the 22nd to the 27th days; 1 Gm. a day of tetracycline was given intravenously, and 2 Gm. daily of streptomycin was given from the 23rd to the 26th days. The patient had the whole gamut of antibiotic therapy. This suggests that she may have had a fever of undetermined origin, due to something other than infection.

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On the third hospital day, abdominal distention, visual and auditory hallucinations, and equivocal nuchal rigidity were observed. This indicated some form of encephalopathy, perhaps a toxic psychosis. Because encephalitis was suspected, lumbar puncture was performed and was negative. The initial pressure was 210 mm. H_2O, with rise to 230 mm., and the closing pressure was 190 mm. The patient's temperature remained high. Vomiting, apathy, confusion, and psychotic behavior persisted with brief lucid intervals. Diarrhea became prominent on the 11th day, requiring treatment with opium. Sacral decubitus ulcers, which we usually associate with severe hypoproteinemia or a spinal cord lesion appeared. On the 18th day, temperature was again noted to be spiking to 103 F, and bilateral flank tenderness was observed. On the 23rd day, in view of increasing and rapid deterioration despite all antibiotic therapy, treatment with 40 units a day of corticotropin intravenously was instituted. The patient rallied briefly but high temperature persisted and she died after a total duration of illness of about seven weeks.

Biochemical Data

Laboratory Values	2/22	2/25	2/27	2/28	Spinal	3/13	3/15	3/18	3/19	3/20
Nonprotein nitrogen, mg./100 ml.	50	...	...	20	...	...	20	27	30	45
Uric acid, mg./100 ml.	...	...	...	...	...	...	...	4.5	...	...
Glucose, mg./100 ml.	87	...	...	...	72	...	...	...	...	...
Total protein, Gm./100 ml.	5.5	4.4	...	4.3	40	5.7	4.5	...	...	...
Albumin, Gm./100 ml.	...	2.4	...	2.9	...	2.7	2.7	...	...	...
Globulin, Gm./100 ml.	...	2.0	...	1.4	...	3.0	1.8	...	...	...
Gamma globulin, Gm./100 ml	1.40	...	...	0.79	...	...	1.05	...	...	...
Cholesterol, mg./100 ml.	147	112	...	...	...	...	...	...	...	...
Icterus index, units	36	10	...	13	...	...	7	...	...	...
Alkaline phosphatase, Bodansky units	1.2	...	...	1.5	...	...	...	...	...	...
Cephalin flocculation	2+	...	...	2+	...	...	2+	...	...	...
Thymol turbidity, units	3.0	...	...	1.0	...	...	3.5	...	...	...
Inorganic phosphorus, mg./100 ml.	3.6	...	...	1.5	...	...	...	...	...	...
Calcium, mg./100 ml.	...	10.3	...	...	...	...	...	...	...	...
Sodium, mEq./liter	123	139	...	136	...	138	...	...	139	...
Chloride, mEq./liter	63	96	...	98	...	107	...	...	100	...
Potassium, mEq./liter	...	2.1	...	2.9	...	2.8	...	...	3.7	...
Carbon dioxide combining power, vol. %	88	58	...	54	...	...	...	...	...	...
Amylase										
Serum, Somogyi units	...	...	16	...	...	...	...	...	...	...
Urine, Somogyi units	...	...	16	...	...	...	...	...	...	...

We have to decide whether this is toxemia of pregnancy or fever of undetermined origin, and I think the best approach would be through discussion of fevers of undetermined origin. When we are confronted with such a patient, we survey the situation, looking successively into a number of areas. The first is infectious diseases, and we consider viral, rickettsial, and bacterial agents. I think we would choose the bacterial and now must consider the species (cocci or bacilli) and possible pathogenesis. Did the patient have a septic abortion, or did she take some emetic agent to produce an abortion, in either case, terminating in a micrococcic septicemia? Instrumentation is unlikely because the mucus plug was still intact. The course is not typically that of a micrococcic septicemia, though I cannot deny it as a possibility. The other outstanding member of the bacterial group is the Mycobacterium tuberculosis, which, in a miliary dissemination, could cause everything that this patient had: the fever, central nervous system involvement, and the severe gastroenteritis.

The next area is that of the reticuloses, including histiocytic, reticulum cell, and lymphogranuloma groups of diseases. The third group of fevers is that of the connective tissue diseases, including lupus erythematosus, periarteritis nodosa, thrombocytopenic purpura, acute dermatomyositis, and systemic scleroderma. These are legitimate children of rheumatoid arthritis. In addition, there are the illegitimate children of Hamman-Rich syndrome, blood group reactions, and other collagen diseases. The fourth group is that of neoplastic disease, especially of such organs as the liver and kidney. These frequently occur with fever as a prominent or presenting manifestation. Then we proceed rapidly to a consideration of organ disease associated with fever, particularly disease of the liver.

If fever is sustained at high levels, one thinks of a form of reticulosis. If temperature spikes, as in this patient, below 98.6 F (37 C) and up to 105 F (40.5 C), we know it is a septic fever, caused by infection. As for the biochemical data, the total protein is low due to diminution of both albumin and globulin. This patient's albumin concentration was down practically to edema level. She had no significant gamma globulin reaction such as we see in liver disease or conditions associated with antibody formation, such as chronic tuberculosis. She entered with an icterus index of 36 but two days later it was 10 and was never greatly elevated thereafter, nor was the cephalin flocculation test elevated. The thymol turbidity was never stimulated. The phosphorus level was low and the calcium level normal. The hypochloremic alkalosis, hyponatremia, and hypokalemia were rapidly corrected by therapy and remained normal. The low serum potassium level was a reflection of the diarrhea.

I now am forced to conclude that this patient had a fever of undetermined origin due to something other than pregnancy. It was not a simple vomiting of pregnancy, and I might select miliary tuberculosis as the cause, but suppose we look at the roentgenograms.

Dr. Leon Love: The patient had two roentgenograms of the chest, both normal. There was no evidence of hilar adenopathy. The heart was within normal limits. The film was taken with the patient supine and there was relative elevation of the diaphragm. There was no bony lesion. The lungs were clear. The next film was taken a week later. There was further elevation of the diaphragm but this undoubtedly was taken with the patient lying down so that the apparent upward shift could be accounted for by displacement of the abdominal contents and the pregnancy. The increase in heart shadow is accounted for on that basis, and the lungs were clear. On the abdominal film, there was a well-defined fetus which would place the pregnancy at about the fifth or sixth month.

Dr. Frederick Steigmann: Do you see evidence of hepatomegaly in the abdominal film?

Dr. Love: Liver enlargement is hazardous to read at best into a conventional film. With all that midline mass and gaseous distention, I would make no statement regarding the size of the liver.

Dr. Steigmann: When we saw this patient on the ward she was semicomatose. We were impressed with the large, tender liver. We believed that she had a toxic hepatitis, perhaps related to a toxemia of pregnancy.

Dr. Samuel J. Hoffman: Would you comment on the wide pulse pressure?

Dr. Foley: The question posed is, could this be a manifestation of sepsis? The wide pulse pressure does not bother me so much when I realize she was five months pregnant, but a systolic pressure of 150 mm. Hg is hypertensive for a pregnant woman. It should be less than 100 at five months. This would be in keeping with a toxemia of pregnancy. We cannot deny the possibility of an aortic insufficiency on the basis of bacterial endocarditis.

Dr. Paul B. Szanto: Could this patient have had a hyperemesis gravidarum?

Dr. Foley: This patient's history and course are very reminiscent of the description of toxemia of pregnancy.[1] This could be toxemia alone, but I believe there must have been something else going on.

Dr. S. Howard Armstrong Jr.: It is true that an occasional hyperemesis gravidarum will produce an esophagitis, but those patients have pain and other manifestations.

Dr. Szanto: This patient had a schizophrenic episode too.

Dr. Foley: I think that is why we must put them all together. The reaction she had could have been part of a delirium, pure and simple. I think there is a definite entity of profound metabolic disturbance with sudden dehydration which can produce delirium, but here delirium came too soon in the course of a hyperemesis gravidarum. It seemed to me that she had some form of encephalopathy, a multiple system disease, or a sepsis of some sort.

Dr. Harold M. Schoolman: Could the diarrheal episode have been the result of the antibiotic therapy?

Dr. Foley: Yes. She was a vulnerable target for any organism, but the antibiotics did not particularly influence her febrile course.

Question: What about the decubitus ulcers? We usually see them terminally in cachectic patients but she was well nourished.

Dr. Foley: These ulcers formed a month later, after she had been febrile and had had diarrhea, but I respect your point, because any time we see patients with decubitus we believe they have a cord lesion or severe hypoproteinemia and so are a vulnerable target for Proteus vulgaris infection.

Clinical Diagnosis.—The clinical diagnosis was hyperemesis gravidarum with toxic hepatitis and fever, probably due to sepsis of undetermined origin.

Pathologist's Report

Dr. Szanto: The body was that of a well-developed, well-nourished girl, who looked older than her stated age. No edema was present. The breasts were enlarged. The uterus reached to the level of the umbilicus and contained a male fetus 17 cm. in length. The pituitary was enlarged (1.1 Gm.) due to the numerous large pregnancy cells belonging to the acidophilic series of the anterior lobe. The adrenals were moderately enlarged, consistent with pregnancy, but the lipid content of the cortex was decreased. The brain was grossly normal. Histological study of sections taken from the various parts of the brain revealed only a nonspecific diffuse, moderate, proliferation of the oligodendroglial cells.

The three cardinal clinical manifestations which must be explained are (1) vomiting, (2) pyuria, and (3) diarrhea.

Was the vomiting due to toxemia? Eclampsia and preeclampsia should be clearly separated from hyperemesis gravidarum or pernicious vomiting, since only preeclampsia and eclampsia belong to toxemia proper. We must decide whether we are dealing with an unusual early variant of eclampsia. Morphologically, the characteristic changes of eclampsia are found in the kidney and liver. In this instance, the basement membranes of the glomerular tufts were delicate. They did not show the characteristic swelling of eclampsia. The liver was enlarged (2,900 Gm.), and its consistency was decreased. Microscopically, fibrin thrombi in the sinusoids and hemorrhagic necroses were not present in the peripheral zones of the lobules as are characteristic of eclampsia, but fatty changes were noted (fig 1), more pronounced in the central zone and decreasing in severity toward the periphery of the lobules. Some of the liver cells contained bile pigment, and a few bile casts were also seen. The nonvacuolized liver cells were swollen and granular. The morphologic appearance of the liver was compatible with the diagnosis of toxic hepatitis.

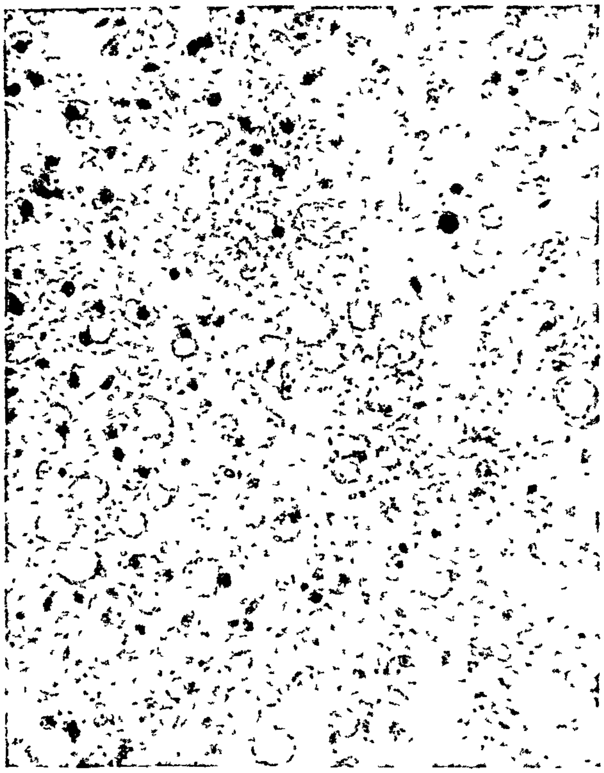

Fig 1.—Fatty changes in liver ("toxic hepatitis"), (hematoxylin-eosin stain, × 120).

Having excluded eclampsia, was this a hyperemesis gravidarum? The patient had severe vomiting in the 12th week of pregnancy. This is rather late, but hyperemesis gravidarum may begin late.[2] The hepatic changes described are characteristic for, but not pathognomonic of, hyperemesis gravidarum and could be explained on the basis of septicemia or nutritional deficiency. Among the multiple precipitating factors that may lead to pernicious vomiting or to vomiting of late pregnancy, we must search for infection, focal or systemic. The spleen was enlarged (290 Gm.), soft, and grossly as well as microscopically had the typical appearance of a septic splenitis. The lungs together weighed 800 Gm. The lower lobes contained microscopic foci of bronchopneumonia. The heart was normal (300 Gm.). The urinary bladder was normal. The ureters were moderately dilated (the right more than the left), as is usually found in pregnancy, but not inflamed. The heart, lungs, uterus, and lower urinary tract offered no explanation for the septic splenitis.

The kidneys were markedly enlarged, their combined weight being 700 Gm., or twice the normal. After stripping the capsule, the surface of both kidneys revealed numerous yellow nodules, distributed at random, pinhead sized to larger, with a tendency to confluence. On section, the cortex was wide and bulging and showed numerous yellow streaks. Similar streaks were seen also in the medulla. The mucosa of the pelvis was injected. Histologically, the kidney showed cortical abscesses and streaks of inflammatory cells in the cortex and medulla. A few of the glomeruli were heavily infiltrated with leukocytes, showing beginning abscess formation, while others appeared entirely normal. The periglomerular connective tissue was infiltrated with lymphocytes and leukocytes. The tubules were dilated and contained numerous leukocytes. The lining epithelium showed extensive degenerative changes and disintegration (fig. 2), resulting in the formation of excretion abscesses with occasional central clusters of bacteria. The interstitial tissue around the tubules was heavily infiltrated by inflammatory cells, leukocytes predominating.

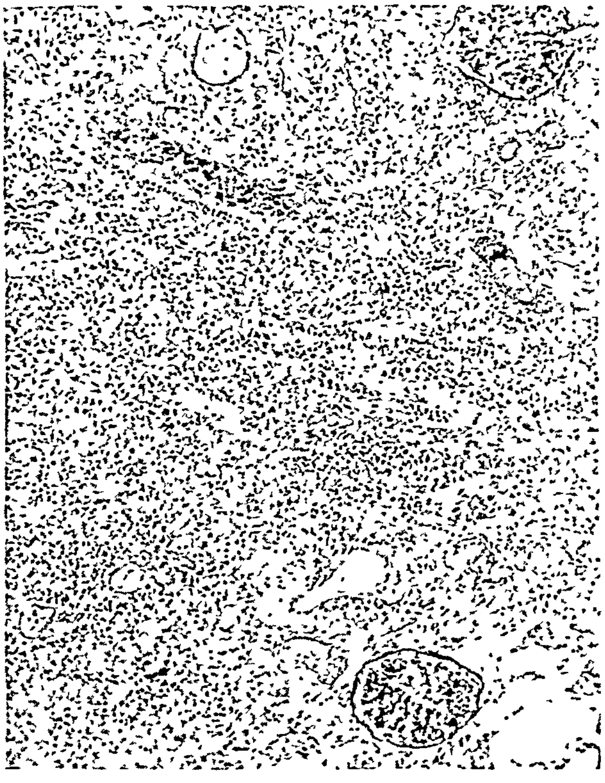

Fig. 2.—Disintegrating dilated tubules containing numerous leukocytes (hematoxylin-eosin stain, × 120).

Pyelonephritis occurring during pregnancy is usually of the ascending type. In this case, however, the bilateral, uniform, diffuse involvement of the

Classification of Upper Respiratory Infections

- Involvement of Upper Respiratory Tract (Outstanding):
  - Bacterial
    - Streptococcic sore throat
    - Diphtheria
    - Vincent's infection
  - Viral or presumably viral
    - Common cold
    - Herpangina
    - Adenovirus infection
    - Herpes simplex infection
  - Fungal
    - Thrush
- Involvement of Upper Respiratory Tract (Minor Part of More Extensive Infection):
  - Bacterial
    - Meningococcic infection
    - Hemophilus influenzae infection
  - Viral or presumably viral
    - Influenza
    - Infectious mononucleosis
    - Rubeola
    - Rubella
    - Roseola infantum
    - Poliomyelitis

and treatment of these infections, both supportive and specific, will be discussed. In addition, the complications that are encountered while using specific therapy and the methods for the prevention of respiratory infections will be outlined.

General Aspects of Treatment

Symptomatic and supportive treatment of patients with upper respiratory infections, regardless of etiology, consists of rest, analgesia, and relief of local symptoms. Rest should be assured, and sedatives, such as the barbiturates, should be used if necessary. Acetylsalicylic acid (aspirin) is the drug of choice for relieving generalized malaise and localized aches and pains. Care should be exercised in the administration of this drug to children because of the possibility of overdosage and the production of salicylism. Sore throat usually responds to the administration of aspirin, but in severe cases codeine may be necessary. Some patients also obtain relief from the pain and "tightness" of throat infections by the use of warm gargles or irrigations with isotonic sodium chloride solution. A local vasoconstrictor in isotonic sodium chloride solution may be used as nose drops for the relief of nasal congestion, but such medication should be limited to the duration of the acute infection.

Cough, when troublesome, can be controlled by the use of humidifiers and codeine. It seems to make little difference whether the moisture added to the air is hot or cold. Codeine alone or cough syrups containing codeine are equally effective. Adequate fluid intake should be insured, particularly in infants with fever, but solid foods are not contraindicated if well tolerated. Such "cold cures" as special diets, purgatives, diuretics, diaphoretics, alkalis, counterirritants, vitamins, antihistamines, and medicated lozenges and sprays are not effective.

An attempt should be made in every upper respiratory infection to establish an etiological diagnosis. Since antibiotic or chemotherapeutic agents are not effective in viral infections of the upper respiratory tract, they should not be employed. If the infection is caused by a bacterial agent, therapy directed against the specific organism should be given. It should be emphasized that, when the appropriate drug has been selected, it should be administered in effective doses long enough to produce maximal benefits.

Specific Diagnosis and Treatment of Major Upper Respiratory Infections

Streptococcic Sore Throat.—Infections with group A streptococci are characterized by the sudden onset of sore throat, headache, fever, chilliness, malaise, abdominal pain, nausea, and vomiting. Sore throat is the most outstanding symptom and is usually associated with acute pain on swallowing. The temperature of the patient varies, but it is generally over 101 F (38.3 C). Gastrointestinal symptoms of abdominal pain, nausea, and vomiting are more common in children than in adults. Simple coryza, hoarseness, and cough are not usually prominent. Physical examination shows diffuse redness and enlargement of the tonsils and of the lymphoid tissue of the pharynx. The uvula is occasionally edematous. Discrete to confluent yellowish white exudate may be found on the tonsils and on the pharyngeal wall but rarely on the uvula. The lymph nodes at the angle of the jaw are swollen and tender. With high fever there may be a flush to the skin, and the appearance of the rash of scarlet fever is diagnostic of a streptococcic infection.

Experience has shown that about one-half of the respiratory infections caused by the Streptococcus organisms are not typical enough to permit a firm clinical diagnosis. In this event, a leukocyte count and a throat culture are of great value. The leukocyte count is typically elevated, usually to above 12,000 per cubic millimeter, but counts above 20,000 are not rare. The presence of large numbers of hemolytic streptococci on a blood-agar plate is almost always diagnostic.

When the diagnosis of a streptococcic infection is made, antibacterial therapy should be instituted as rapidly as possible. However, the delay that is necessary to confirm the diagnosis bacteriologically does not reduce the efficacy of penicillin in the prevention of rheumatic fever. Penicillin is the drug of choice, and the intramuscular route is recommended because it insures adequate treatment. Regardless of how the drug is administered, it is essential that the patient be treated for a period of 10 days to insure eradication of the organisms.

The following regimens, listed in the order of preference, have been found to be satisfactory: 1. Benzathine penicillin G (Bicillin, Permapen): one intramuscular injection of 600,000 units (children) or 900,000 units (adults). 2. Procaine penicillin G with aluminum monostearate in oil (Depo-Penicillin, Lentopen): one intramuscular injection of 300,000 units (children) or 600,000 units (adults) every third day for three doses. 3. Procaine penicillin G as an aqueous suspension: one intramuscular injection of 300,000 units every day for 10 days. 4. Penicillin in the form of a buffered soluble salt of penicillin G, potassium penicillin O (Cer-O-Cillin Potassium), or phenoxymethyl penicillin (Pen-Vee, V-Cillin): 250,000 to 500,000 units (depending on the form) given orally four times a day for 10 days, administered 30 minutes before meals or 2 hours after meals.

Other antibiotics are not as effective as penicillin in eradicating streptococci or in preventing the nonsuppurative complications; therefore, their use should be reserved for patients who cannot tolerate penicillin. In such patients erythromycin (Erythromycin, Ilotycin), tetracycline (Achromycin, Panmycin, Polycycline, Tetracyn), chlortetracycline (Aureomycin) hydrochloride, or oxytetracycline (Terramycin) hydrochloride should be given in full therapeutic doses for 10 days, or approximately 22 to 44 mg. per kilogram (10 to 20 mg. per pound) of body weight per day for children and 1 to 2 Gm. per day for adults. Treatment with the sulfonamide drugs is not effective.

Diphtheria.—In contrast to most other infections of the upper respiratory tract, diphtheria is a serious and, at times, fatal disease. Fortunately, its occurrence is now rare, but its potential danger should keep every physician alert to its diagnosis. It is not within the scope of this paper to review completely the symptoms, signs, and treatment of diphtheria; instead, a few of the more salient points in the management of these patients will be discussed.

The principal finding in patients with diphtheria is a gray, adherent membrane, often with tenuous edge, that may extend even beyond the tonsils and occasionally over the uvula. The tonsils frequently are large, but the mucosa of the pharynx is not usually as red as that found in streptococcic infections. The lymph nodes in the neck are enlarged. The patient is febrile and may appear more prostrated and have a faster pulse than the physical signs in the throat would indicate, although usually the fever is not as high and the general and local symptoms not as severe as with a streptococcic infection.

The initial diagnosis of diphtheria must be made by clinical means; it is not safe to delay treatment until laboratory confirmation is obtained. When the diagnosis of diphtheria is suspected, antitoxin should be administered in full therapeutic doses as soon as it can be determined that the patient is not sensitive to the antitoxin. Since the toxin produced by the diphtheria organisms is responsible for the serious nature of this disease, the administration of antitoxin is the most important aspect of therapy. It is desirable, however, to eradicate the diphtheria bacillus as quickly as possible, to prevent spread of the organism to contacts of the patient and to prevent the carrier state. Penicillin, chlortetracycline, and erythromycin have all been advised for this purpose, but their efficacy has not been adequately evaluated.

Vincent's Infection.—Vincent's stomatitis or Vincent's angina is the diagnosis given to a condition characterized by gingivitis and necrotic ulcers of the buccal mucosa, the tonsils, and occasionally the pharynx. These lesions are accompanied by varying degrees of systemic involvement. Direct smears from the lesions show spirochetes and fusiform bacilli, but there is no agreement as to whether these organisms are the actual cause of the disease or only secondary invaders. It is possible that the herpes simplex virus is a cause of some cases of Vincent's stomatitis, but this organism cannot be isolated from all cases, and it now seems probable that there are multiple etiological agents. Because the etiology cannot be determined in most cases, it is difficult to recommend specific therapy; the fact that numerous therapeutic agents have been advocated emphasizes the probability that none is entirely successful. Penicillin has been reported to be effective but, if used, should be given parenterally and not as a mouth wash. Good oral hygiene is an important aspect of therapy.

Common Cold.—Respiratory infections classified as the common cold are the most frequent of all infections. In the study of Cleveland families, this diagnosis was made in 40% of all illnesses and in 60% of all respiratory illnesses. The common cold may be defined as a mild, usually afebrile, upper respiratory tract infection in which most of the clinical signs are caused by inflammation of the mucous membranes of the nose. Occasionally, spread to contiguous structures, the paranasal sinuses or the pharynx, may occur. Sneezing, coryza, lacrimation, and scratchy throat are common symptoms, and physical examination shows little more than a red, edematous nasal mucosa. Laboratory tests are within normal limits.

The common cold is transmissible from one human host to another; it is also transmissible to the chimpanzee but not to the common laboratory animals. In the last three decades, several investigators have reported the cultivation of a common cold virus in embryonated eggs or tissue culture. These reports have not been confirmed. Recently, Price has isolated a virus from patients with illnesses resembling the common cold and has reported that a vaccine prepared with this virus prevented illness among the children injected in an institution during an outbreak of upper respiratory infections. Sufficient data are not yet available to permit adequate evaluation of this report. In human transmission studies, as well as in epidemiologic studies in families, immunity to repeated infections has not been demonstrated. Since the clinical signs are so variable from one person to another, or even in the same person at different times, it is possible that the clinical syndrome now called the common cold is caused by multiple agents. Numerous drugs have been advocated for the specific treatment of the common cold, but none has proved to be effective when adequately tested under controlled conditions.

Herpangina.—Herpangina is an uncommon respiratory infection that may be caused by several of the Coxsackie A viruses. The characteristic lesions of this entity are commonly located on the anterior pillars of the fauces, are usually few in number, are 1 to 5 mm. in diameter, and appear as white or gray vesicles and later as ulcers surrounded by a red areola. A temperature occasionally as high as 105 F (40.5 C), sore throat, headache, myalgia, and abdominal pain are common features. The leukocyte count is usually normal, and throat culture shows normal flora. The clinical picture of herpangina is characteristic and allows a presumptive diagnosis which can be confirmed in the laboratory by isolating the virus and by demonstrating the development of antibodies to the virus in convalescent serum from the patient. The disease is self-limited; no specific treatment is available.

Adenovirus Infections.—The adenoviruses comprise a new group of viruses that were first described in 1953. These viruses are readily grown in tissue cultures, and at the present time more than 23 separate and distinct types, both of human and simian origin, have been described. Since not all adenoviruses have been associated with respiratory infections in man, mention will be made only of the two clinical entities in which there appears to be definite association between several of these viruses and upper respiratory disease.

The type 3 adenovirus and, rarely, several of the other types have been associated with nonbacterial pharyngitis or pharyngoconjunctival fever. This disease entity accounts for only a small part, approximately 1 to 4%, of the nonbacterial respiratory infections in the civilian population. It is characterized by a temperature often as high as 103 to 104 F (39.4 to 40 C) lasting 1 to 10 days, sore throat, headache, lassitude, and, in some instances, conjunctivitis. The sore throat is usually not as severe as with streptococcic infections. On physical examination, the tonsils and the lymphoid tissue of the pharynx are enlarged; the mucosal surfaces are red, and grayish white exudate may be present. If exudate is found, it is usually in small, discrete patches in the tonsillar crypts. Conjunctivitis, when present, is follicular in character and may involve one or both eyes. Cervical lymphadenopathy is common, and the nodes may be tender. The leukocyte count is normal in most cases.

Definite diagnosis can be made only by isolating the virus in tissue culture and by demonstrating the formation of antibodies in the host by neutralization or complement-fixation titrations. These laboratory aids, however, are not usually available and clinically are of limited value, because the results frequently can be obtained only after the patient has recovered. Since specific therapy is not indicated in nonbacterial pharyngitis or pharyngoconjunctival fever, it is important only to differentiate this entity from streptococcic sore throat. This can frequently be done by clinical means and the leukocyte count, but the absence of hemolytic streptococci on throat culture is most helpful in excluding the diagnosis of streptococcic disease.

During World War II the Commission on Acute Respiratory Diseases delineated a clinical syndrome in military recruits called acute respiratory disease (or ARD). Since the discovery of the adenoviruses, it has been shown that this syndrome is commonly associated with the adenoviruses, types 4 and 7. Infection with one of these viruses is the commonest cause of upper respiratory disease among recruits in the military service but is rarely seen among civilian populations. The cause for this paradoxical situation is unknown. ARD is characterized by a gradual onset, feverishness, chilliness, headache, malaise, and anorexia. The throat is sore, but usually without pain on swallowing. Hoarseness and cough are common. The temperature averages 101 F (38.3 C). On physical examination, the pharynx is moderately red, and the tonsils and lymphoid tissue may be enlarged. The cervical lymph nodes may be palpable but are not usually large and tender. The leukocyte count is normal. As with nonbacterial pharyngitis or pharyngoconjunctival fever, the specific diagnosis can be made by virus isolation or by demonstration of an increase in antibody titer in the serum after the infection. No specific treatment is available.

Antibodies to types 1, 2, 5, and 6 adenoviruses are commonly found in civilians of all ages, and these viruses have occasionally been isolated from patients with respiratory illnesses. As yet, however, there has been no frequent or consistent association between these types of adenoviruses, or the other remaining types, and clinical respiratory disease.

Herpes Simplex Infection.—The usual disease entity associated with the herpes simplex virus is herpes labialis (cold sore, fever blister), but occasionally, on first contact with this virus, children develop acute herpetic gingivostomatitis. This disease entity is characterized by marked systemic reactions and oral lesions consisting of vesicles which rapidly rupture, leaving a gray membrane or ulcer. The tongue and cheek show these lesions most frequently, but other parts of the mouth and pharynx may be involved. The lesions are quite characteristic and are not usually confused with other infections of the throat. There is no effective therapeutic agent against the herpes simplex virus.

Thrush.—Thrush is a common infection caused by the fungus Candida (Monilia) albicans and is found principally in infants and debilitated children or adults. The disease is manifested by the appearance on the mucous membranes of the mouth and throat of confluent, pearly white, elevated patches which, when forcibly removed, leave a raw surface. Few symptoms are referable to these lesions. The diagnosis can be confirmed by demonstrating the characteristic budding, yeast-like fungus with hyphal fragments in fresh smears from the lesions, or by cultivating the fungus on common laboratory mediums. Prior to the introduction of antibiotics, corticotropin (Acthar, Corticotropin, Depo-Acth), and cortisone (Cortisone, Cortogen, Cortone) acetate, the disseminated form of the disease was rare. In recent years, however, pneumonia, involvement of the gastrointestinal tract, and generalized moniliasis have become more common, particularly as a complication in patients who are receiving antibiotic drugs or adrenal cortical steroids.

Thrush usually responds to the local application of a 1% solution of gentian violet, a 1% solution of borax in glycerin, or a 20% aqueous solution of sodium caprylate. Attention to the over-all health of the patient is important. Recently a new antibiotic, nystatin (Mycostatin), has been found to be effective in monilial infections and can be employed locally or orally. The drug should be tried in cases resistant to the usual therapy or in cases in which the infection has spread to the gastrointestinal tract. Nystatin is poorly absorbed from the gastrointestinal tract and is probably not effective in other types of moniliasis.

Upper Respiratory Tract Infections Associated with More Extensive Disease

Meningococcic Infection.—Patients with meningococcic infections, either meningitis or meningococcemia, frequently have mild symptoms referable to the upper respiratory tract, and cultures from the throat may show the presence of meningococci. Likewise, throat cultures from contacts of these patients may show meningococci. Although the possible relationship between the meningococcus and upper respiratory disease is recognized, this organism is not considered a common cause of primary upper respiratory infections. Therefore, the only time when the presence of the meningococcus in the throat assumes importance is when it is associated with more extensive and severe disease, and treatment should be limited to these cases.

Hemophilus Influenzae Infections.—The status of the association of H. influenzae and upper respiratory tract infections is similar to that described for the meningococcus. Patients with meningitis and laryngotracheobronchitis caused by this bacterium frequently have mild upper respiratory tract symptoms, and the organism may be cultured from the throat. Primary tonsillitis or pharyngitis due to the influenza bacillus, however, has not been recognized as a clinical entity and need not be considered in the differential diagnosis of uncomplicated upper respiratory tract infections.

Influenza.—Infections with influenza viruses, types A or B, occur either as sporadic cases or, more characteristically, in epidemics. Sporadic infections are infrequently recognized because the clinical picture is usually not distinct enough to allow separation from noninfluenzal illnesses constantly present in any population. In contrast, and as illustrated by the outbreak of type A Asian strain infection, typical cases are more readily diagnosed during epidemics when 10 to 20% of a population may be expected to manifest the disease within a period of several weeks.

The onset is usually abrupt, with chilliness, feverishness, headache, weakness, pain in the eyeballs, pain in the back, muscular aches, and frequently cough. The symptoms of coryza, sneezing, and hoarseness may be present but seldom are prominent. Temperature ranges from 101 to 105 F (38.3 to 40.5 C). Examination shows an acutely ill, prostrated patient with flushed face and, commonly, suffusion of the conjunctivas. The pharynx is red, and rales may be heard in the chest. The leukocyte count and the throat culture are usually within normal limits. As with most viral infections, the exact diagnosis depends on isolation of the virus or demonstration of the development of specific antibodies in the blood of the host.

Much has been written about bacterial complications in influenza. There can be little doubt that secondary bacterial infections, in particular bacterial pneumonia, contribute importantly to the death rates during epidemics of influenza. Such rates, however, have not been dramatically high in this country since the pandemic of 1918. The presently available antibiotic and chemotherapeutic drugs are not effective in the treatment of influenza, and bacterial complications so far have been infrequent. Accordingly, antimicrobial agents should be reserved until complications occur, or should be used routinely only in debilitated patients in whom complications would be especially dangerous. Patients suspected of having influenza should not be admitted to the hospital unless absolutely necessary because of the danger of cross-infections with antibiotic-resistant strains of bacteria.

Infectious Mononucleosis.—Infectious mononucleosis is a generalized disease characterized by adenopathy, splenomegaly, hepatic involvement, pharyngeal lesions, an increase in the peripheral blood of mononuclear cells, many of which may be atypical lymphocytes, and an increase in heterophil antibodies. The pharyngeal lesions vary from petechial areas on the soft palate to a dirty gray membrane on the tonsils. Infectious mononucleosis is important in the discussion of respiratory infections because it is occasionally confused with streptococcic infections or diphtheria. Antibiotics are not effective in shortening the course of infectious mononucleosis.

Others.—Symptoms referable to the upper respiratory tract have been described in rubeola, rubella, roseola infantum, poliomyelitis, and in many other diseases, both infectious and noninfectious in etiology. In these diseases symptoms of involvement of the upper respiratory tract are of secondary importance to the generalized illness and require no specific antibiotic therapy.

Bacterial Complications of Upper Respiratory Infections

The bacterial complications that occasionally accompany or follow upper respiratory infections are otitis media, mastoiditis, sinusitis, peritonsillar cellulitis, pneumonia, and meningitis. The bacteria usually involved are hemolytic streptococci (group A), staphylococci, pneumococci, and influenza bacilli. The total incidence of these complications is so low that the prophylactic use of antimicrobial drugs is not indicated except in cases in which such complications would be especially dangerous, such as in patients with severe heart disease, nephrosis, or chronic lung infections. Normal individuals with upper respiratory infections, therefore, should be observed carefully, and specific therapy should be started only when the clinical signs indicate that a complication has arisen. Before treatment is instituted, bacterial cultures should be obtained to determine the causative organism and, if necessary, to test its sensitivity to antibacterial agents. If an ineffective drug has been chosen initially, a more appropriate one can then be administered.

The selection of an antibiotic drug for the treatment of a complication usually must be made empirically. Certain factors, however, occasionally help in making the choice and will be mentioned briefly. Complications accompanying streptococcic infections usually are caused by this same organism and respond to the administration of penicillin, the drug of choice in uncomplicated streptococcic infections. Otitis media, the commonest complication of respiratory infections, is usually caused by pneumococci, H. influenzae, or hemolytic streptococci. If an exact etiological diagnosis cannot be made, otitis media should be treated with one of the broad-spectrum antibiotic drugs.

Chemotherapy is effective in most bacterial complications, but occasionally surgical intervention is necessary. Otitis media, peritonsillar cellulitis, and mastoiditis are examples in which the response after surgical treatment is frequently dramatic.

Complications of Specific Therapy

The benefits derived from the use of chemotherapeutic and antibiotic agents far outweigh any of the reactions or complications that have arisen with the administration of these drugs. The complications that have been described with most of the agents in current use, however, are frequent and serious enough to cause some concern. Each time an antimicrobial agent is used, the physician should give careful consideration to the benefits that can be expected, as compared with the possibilities of encountering difficulty. It is the purpose of this section to call attention to the more common and serious types of complications that have been reported.

Sensitivity Reactions.—Sensitivity reactions may occur after the use of any of the antimicrobial drugs, but more than 90% of the reported cases have occurred with penicillin. The frequency of sensitivity reactions to penicillin appears to be increasing, probably because of the increase in use of the drug and possibly because it is more antigenic than has been thought. The vast majority of penicillin reactions occur after the intramuscular injection of the drug. Angioneurotic edema and urticaria are the most frequent types of reactions and are not usually severe, unless they are associated with cerebral or respiratory involvement. Anaphylactoid reactions are not as common but are always serious. Approximately 10% of the reported cases have been fatal, and more than 100 fatalities have been recorded. Illnesses resembling serum sickness occur infrequently and are not usually severe. Other dermal reactions, including exfoliative dermatitis, hemorrhagic purpura, and erythema multiforme, occur infrequently but are usually more severe in nature. Death has occurred in 10% of the reported cases.

Gastrointestinal Disturbances.—Nausea, vomiting, and diarrhea are encountered commonly after oral administration of the broad-spectrum antibiotics but, unless associated with staphylococcic superinfection as mentioned later, are not serious in most instances.

Superinfections.—After the use of most antimicrobial agents, one or more types of bacteria and fungi will frequently appear in abnormal numbers. Candida (Monilia), staphylococci, and gram-negative bacilli are the organisms most commonly found. Enterocolitis, associated with oral use of the broad-spectrum antibiotics and due to Staphylococcus pyogenes var. aureus, is the most serious of the superinfections, particularly when it occurs as a complication of abdominal surgery. The case fatality rate is approximately 30%.

Resistant Bacteria.—Many bacteria, notably hemolytic streptococci and pneumococci, have maintained their sensitivity to most of the antibiotics. In contrast, gram-negative bacilli and staphylococci may be resistant to antimicrobial drugs or may rapidly develop such resistance. The management of infections due to these organisms is accordingly difficult, since antibiotic therapy may be ineffective. A number of studies have demonstrated that strains of staphylococci isolated in hospitals are more resistant to antibiotics than those isolated from the population at large. In general, the resistance of the hospital strains is connected with the amount and kinds of antibiotics used in a given institution. Hospital personnel become carriers of the resistant strains, and the environment becomes contaminated with these organisms. A high proportion of hospital-acquired infections are due to such strains. For these reasons, some authorities have recommended that the use of one or another of the broad-spectrum antibiotics, to which the hospital organisms are susceptible, be reserved solely for the treatment of hospital-acquired infections.

Neurotoxicity.—Vestibular and auditory disturbances have been described after the prolonged use of streptomycin and dihydrostreptomycin. The combined use of half-doses of each appears to be associated more frequently with hearing impairment than does the use of full doses of streptomycin alone.

Hematological Problems.—Aplastic anemia, leukopenia, and thrombocytopenic purpura have been reported after the use of chemotherapeutic and antibiotic agents, chiefly the sulfonamide drugs and chloramphenicol (Chloromycetin). These reactions are rare but can be quite serious, and some fatalities have been reported.

Prevention and Control

Prevention of several of the bacterial and viral diseases discussed in this paper is possible, either by the prophylactic administration of an antimicrobial drug or by the injection of a vaccine to produce protective antibodies. Of the bacterial infections discussed, streptococcic and meningococcic infections and diphtheria can be prevented. Diphtheria toxoid, alone or in combination with tetanus toxoid or pertussis vaccine, has been widely and effectively used in the control of diphtheria.

At the present time there are no vaccines effective in the control of streptococcic infections, but these infections can be prevented by the prophylactic administration of several drugs. Prophylaxis is not recommended for routine use in normal individuals living at home; treatment after the development of symptoms is the preferred routine in this situation. Prophylaxis is especially indicated in individuals who have had rheumatic fever and who are subject to recurrences of this disease after subsequent streptococcic infections. Chemoprophylaxis may also be desirable to prevent the epidemic occurrence of streptococcic infections among closed population groups, such as military installations, boarding schools, or ship's personnel. Benzathine penicillin G, 1.2 million units given intramuscularly once a month, or a buffered soluble salt of penicillin G, 200,000 to 250,000 units given orally once or twice a day (not at mealtime), or sulfadiazine, 500 mg. to 1 Gm. given daily, is effective in preventing streptococcic infections.

The prophylactic use of drugs in the prevention of meningococcic infections is not usually necessary; in some situations, however, as when meningococcic disease is occurring epidemically in closed population groups, small daily doses of sulfadiazine (500 mg. to 1 Gm.) given for several days to all individuals are indicated. This same regimen may also be desirable for the family contacts of a patient with a meningococcic infection.

No chemoprophylactic agents are effective in preventing viral respiratory diseases, but vaccines are now available for use against influenza and adenovirus infections. Influenza vaccine is prepared from the developing chick embryo and usually contains both types A and B viruses. This vaccine has been very effective during certain epidemics; at other times, however, because of the changing antigenic patterns of the influenza viruses, the available vaccine has not been effective. During widespread epidemics, when the type of virus causing infection can be predicted with considerable accuracy, a vaccine prepared with this same strain of virus can be expected to be effective, a situation exemplified by the recent initial development and use of a type A Asian strain vaccine.

In the face of an epidemic or of a limited supply of vaccine, priorities for vaccination may be required. Before a community-wide program is instituted, preference generally should be given to persons engaged in maintaining the health of the community and basic community services, and to pregnant women and patients with chronic diseases for whom influenza may constitute a special risk. The vaccine should not be administered to persons known to be highly sensitive to eggs or chickens. The usually recommended doses of vaccine are as follows: for adults, 1 cc. administered subcutaneously; for children, 5 to 12 years of age, 0.5 cc. subcutaneously, repeated in 2 to 3 weeks; and for children, 3 months to 5 years of age, 0.1 cc. intradermally or subcutaneously, repeated in 2 to 3 weeks.

A vaccine containing two or three types of adenoviruses (types 3, 4, and 7) has been developed recently by means of tissue culture techniques similar to those employed in preparing poliomyelitis vaccine. When tested among military populations, this vaccine was effective in preventing the adenovirus disease so common in recruits (ARD). Because of the rarity of adenovirus infections among civilian populations, however, there is no indication at the present time for the general use of this vaccine.

Other methods for the prevention and control of upper respiratory infections should be mentioned only to stress their ineffectiveness. Control of air-borne spread by ultraviolet rays or dust suppression, special diets or vitamins, tonsillectomy and adenoidectomy, bacterial or "cold" vaccines, and antihistaminic drugs have all been championed at some time, but they have been found to be of no value when adequately tested under controlled conditions.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Because of its interest and concern in the field of postgraduate medical education, the Council on Medical Education and Hospitals is pleased to direct the attention of the medical profession and medical educators to the following special article. This analysis of postgraduate medical education in Kansas presented by the Department of Postgraduate Medical Education of the University of Kansas School of Medicine clearly portrays what physicians in that area actually do about their continuing education. It is to be hoped that other institutions active in this field will be encouraged to undertake such studies, as they would yield information of inestimable value to the planning of effective postgraduate opportunities.

E. L. Turner, M.D., *Secretary*
Council on Medical Education and Hospitals

POSTGRADUATE MEDICAL EDUCATION IN KANSAS

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Watchwords, although apt to be dangerous and misleading, have frequently spearheaded the most worthy human causes. "Taxation without representation," "Give me liberty or give me death!" and making the world "safe for Democracy" are but a few of the most obvious slogans that have contributed to our destiny. In medicine, as in other sciences, there is small room for the watchword with its associated emotionalism, but there has recently crept into the field of medical education a neat, terse watchword which typifies a change in the thinking of the entire profession—a change which will influence the health and well-being of a large portion of the population. The slogan is "Forty years, not four!" and refers to the ill-defined process of medical education which has become a life-long process; it is dramatic evidence of the solid ground on which postgraduate medical education stands.

Secure in the belief that the M.D. degree is only one formal step in the education of the physician, the University of Kansas School of Medicine has assumed active responsibility in the field of postgraduate education for the past 40 years. Spurred into greater action by the establishment of a department of postgraduate medicine headed by an academic chairman and a full-time director, the school has been able to develop an increasingly ambitious program which has been successful in establishing an excellent record of physician enrollments in postgraduate courses.

Such a program, with its deep roots and long growth, must at some time inevitably concern itself with an attempt to determine not only what it has done in the past but what it must yet do in the future. In this spirit of self-analysis and self-evaluation, sufficient information was gathered during 1955 and 1956 regarding Kansas physicians and their approach to postgraduate activities to justify some significant observations.

It was learned, for example, that, as a student body, Kansas physicians constitute a remarkable group. Records studied in 1956 revealed that 83% of the practicing physicians of the state had at some time attended at least one postgraduate course offered by the University of Kansas School of Medi-

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cine. Over 85% of this group had been in attendance within the immediate preceding five-year period. It was thus seen that 71% of all Kansas physicians in active practice had, during the preceding five-year period, attended one or more postgraduate courses at the University of Kansas Medical Center. From the records for 1955 and 1956 it was seen that Kansas physician enrollments in postgraduate courses offered by the University of Kansas School of Medicine amounted to approximately 64% of the active physician population of the state.

The path into analysis of postgraduate study by physicians is not without landmarks. In addition to various local studies, a survey prepared in 1955 by Dr. Douglas D. Vollan under the ægis of the American Medical Association's Council on Medical Education and Hospitals presents an excellent national report of investigation.[1] This report is of considerable value in providing a national scale by which individual efforts may be measured.

Survey Method

In the spring of 1955 an extensive survey among the physicians of Kansas was undertaken by the department of postgraduate medicine of the University of Kansas with the cooperation of the Kansas Medical Society. Questionnaires were mailed to 1,450 Kansas physicians (M.D.'s) who were known to be in active practice at that time. Physicians in full-time practice at the University of Kansas Medical Center, retired or semiretired physicians, interns, and residents were excluded from the survey. The returns from this questionnaire totaled 902, or approximately 62% of the number to whom it was mailed.

The questionnaire, while preserving the anonymity of the physician, requested such information as age, year of graduation from medical school, number of years of internship and residency, size of community in which he practiced, type of practice, and certification by specialty boards or membership in the American Academy of General Practice. Each respondent was also asked to estimate in hours the amount of formal postgraduate work he had taken in the past three years. By "formal" postgraduate work the questionnaire intended to signify attendance at a postgraduate course offered by a medical school and not to imply attendance at scientific programs of various medical organizations. The three-year base period was used to obtain a more accurate over-all picture, and it was patterned on the standard of time set by the American Academy of General Practice in determining the postgraduate obligations of its members.

The initial tabulation of questionnaires revealed that approximately 62% of the sample group were in general practice (table 1). This percentage corresponds almost exactly to the estimated percentage of general practitioners in the United States. This figure also corresponds to the actual total percentage of generalists now practicing in the state of Kansas. These correlating percentages, then, would seem to indicate a fair sampling from the standpoint of specialists versus generalists.

Our questionnaire revealed that slightly over one-half (54.6%) of the respondents were in solo practice, as compared to the remaining respondents who were either in partnership (23.9%) or group practice (20.1%) or, as with a small percentage, in institutional (0.6%), governmental (0.6%), or similar practice (0.2%).

In an effort to clarify and evaluate the significance of the amount of postgraduate work taken by the respondents as expressed in hours, an arbitrary division was made to distinguish between adequate, inadequate, and superior amounts of work. Following the standard set by the American Academy of General Practice, it was decided that 50 hours of formal postgraduate work every three years was a necessary *minimum.* Therefore, responses that showed less than 50 hours of work were classified as inadequate for our study. This assumption was made with some reservation, inasmuch as no one has demonstrated that 50 hours of postgraduate work taken every three years is a reasonable minimum. Furthermore, mere clock hours of attendance as a sole criterion of learning is not a reliable index; attitude, interest, teaching techniques, selection of topics, and many other elements are factors which must certainly be considered. Any respondent who reported more than 150 hours of postgraduate work within the preceding three-year period was classified as having taken a superior amount of work.

TABLE 1.—*Physicians in Specialty and General Practice*

Classification	Respondents No.	Respondents %
Certified specialists	237	26.28
Uncertified specialists	108	11.97
Total	345	38.25
Part-time specialists	168	18.62
General practitioners	389	43.13
Total	557	61.75
Total respondents	902	100.

There are many factors, both personal and professional, which determine how much postgraduate work each physician takes and where he takes it. A thorough consideration of the significant professional factors has been presented in Vollan's study,[1] and it is not our purpose merely to sound a regional echo of what has been established for the nation by that work. But there remain, nevertheless, some significant deviations and observations in Kansas that are noteworthy.

Problems of Solo Practice

It is readily understood that one of the major problems of postgraduate attendance is that of disposition of patients while the physician is necessarily absent from his practice. Vollan states, "The greatest single deterrent to postgraduate attendance is the lack of someone to care for the physician's patient while he is away."[2] Physicians in partnership are not so deeply concerned with this problem, and those physicians practicing within a group usually benefit from annual "leave time" scheduled for the express purpose of attendance at postgraduate courses. The physician in solo practice who, because of the isolated nature of his professional efforts, would seem to benefit the most, is usually the one who can least afford to leave his patients to participate in postgraduate activities.

According to information supplied by the respondents, the problem of solo practice in Kansas does not influence the actual educational activities as physicians nationally were of the opinion it would. In table 2 one notes that patient disposition has almost no significance in its relationship to the amount of postgraduate work taken by the physician. One of the reasons for this may be the fact that Kansas has for some time followed one of the three basic precepts of the Kansas Plan for Rural Health: sponsorship, promotion, and execution of a planned and regularly scheduled circuit program throughout the state. Under the leadership of Dr. Franklin D. Murphy, then Dean of the University of Kansas School of Medicine, point 3 of the Kansas Plan, as formulated in 1948, promised to provide adequate postgraduate medical education to all Kansas physicians: "Cities in Kansas will be chosen for their strategic geographic location, and teams of instructors made up of members of the faculty of the medical school and qualified practitioners of medicine in Kansas will travel from one city to the next giving the newest and most practical information in diagnosis and treatment of specific medical problems."

TABLE 2.—*Disposition of Patients and Amount of Postgraduate Work*

Patient Disposition	No. of Replies	Postgraduate Work in Past 3 Yr., %		
		<50 Hr.	50-150 Hr.	>150 Hr.
Partner cares for patients........	303	25.8	44.5	28.7
No partner to care for patients..	368	26.5	49.4	24.2

For six months during the year, under the present Kansas extramural postgraduate plan, two separate teams of instructors go out each month to travel a combined distance of approximately 1,800 miles to bring annually 30 hours of category 1 postgraduate education to each enrollee in eight different circuit centers throughout the state. With the total yearly enrollment at the circuit courses averaging over 400, the problem of "getting away" is, apparently, minimized for a large portion of the physician population in Kansas.

Specialized versus General Practice

Organizers and planners in postgraduate education realize that their programs ought to be tailored to fit the needs of the entire physician population with which they are concerned. It becomes temptingly easy for medical schools with their predominance of highly trained specialists to indulge heavily in postgraduate activities which may have a limited appeal. Considering that almost 62% of the national physician population is in general practice, it is apparent that postgraduate education planning must consider their needs in proper proportion. In the recent past, this has not occurred in the country as a whole. Vollan reported, regarding the 1952-1954 study, "An overwhelming majority of postgraduate courses are offered in special fields or specialty subjects. Only a small fraction of the opportunities (4.1%) are primarily and specifically in the field of general medicine, i. e., for general practitioners."[3] It might well be that some courses in special fields would be of more interest to physicians in general practice than would some courses in general medicine. Approaching the study from a different angle by inquiring for whom the courses are designed, the most recent study of postgraduate courses (for the year Sept. 1, 1956, to Aug. 31, 1957), reported by the Council on Medical Education and Hospitals of the American Medical Association, shows that 68.3% of all the courses taking place that year in the United States were specifically and primarily designed for physicians in general practice and another 11.3% were designed for both general practitioners and for physicians in

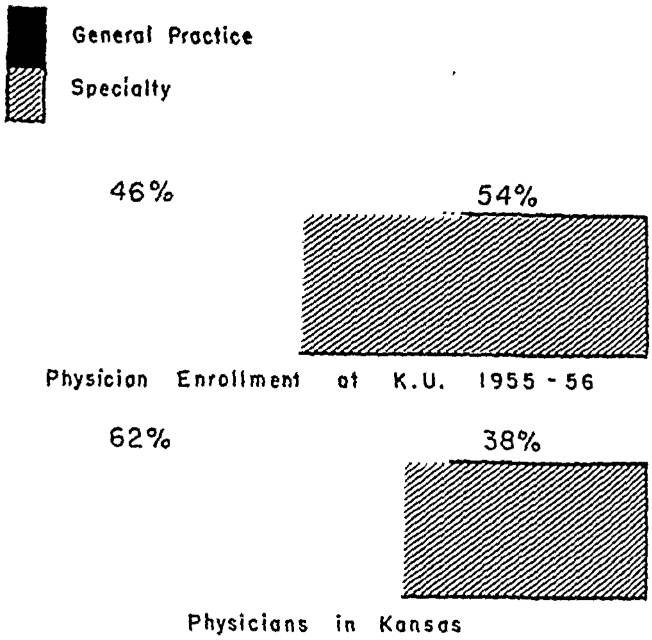

Fig. 1.—Type of practice of physicians in Kansas and postgraduate study.

full-time specialty practice. Only 20% of the 1956-1957 courses were designed primarily for full-time specialists.[4]

The University of Kansas does not propose to aim any course "down" to the general practitioner. Instead, programs are designed with a diversity of appeal for all physicians in all fields of practice, though not necessarily attempting to appeal to all in each program. Enrollment figures for the year 1955-1956 at the University of Kansas present an interesting picture. Forty-six per cent of the total number of physician enrollments from all states was accounted for by doctors in general practice (fig. 1).

It has been reported that for the United States as a whole full-time specialists take larger amounts of postgraduate work than do their colleagues in general practice—8.1 days per year for full-time specialists, as contrasted to 5.6 days per year for general practitioners and 7.8 days for part-time specialists.[5] This condition is significantly altered in Kansas (table 3). Among the physicians responding to the questionnaire, the percentage of general practitioners reporting "inadequate" amounts of postgraduate work was less than the equivalent percentages of the specialists.

TABLE 3.—*Relationship Between Type of Practice and Amount of Postgraduate Work Taken in Past Three Years*

Practice	No of Replies	Postgraduate Work in Past 3 Yr., % <50 Hr	50-150 Hr.	>150 Hr
Certified full-time specialty.......	167	31.7	43.1	25.2
Uncertified full-time specialty...	81	27.2	45.6	27.2
Part-time specialty......	125	16.0	50.4	33.6
General (total).....................	289	29.1	46.7	24.2

Geographical Factors

Considerable point has been made of the necessity for making postgraduate work available to physicians in remote areas of the nation, and it is undoubtedly true that men practicing in extremely isolated districts encounter more difficulty in obtaining adequate postgraduate experience than those to whom postgraduate activities are more easily accessible. It was surprising, therefore, to find that the distances involved in the state of Kansas did not have an adverse effect upon the number of hours of formal postgraduate work taken. As shown in figure 2, physicians who are under the necessity of traveling over 250 miles for all but circuit courses had a smaller percentage of representatives reporting an "inadequate" amount of postgraduate work than any other group. Furthermore, they had a larger percentage of representatives who reported an excess of 150 hours. One might conclude from this information that there is almost an inverse relationship between the necessary travel distance and the amount of postgraduate work taken.

Size of Community

An interesting and possibly related factor that influences the amount of postgraduate work which the physician seeks is the size of the community in which he practices. It was found that, generally speaking, a smaller percentage of physicians from communities of 20,000 or less reported "inadequate" postgraduate work than did physicians from larger communities (fig. 3). One factor may be that of medical isolation; physicians from larger communities may receive more of their postgraduate education by personal contacts with colleagues and consultants, whereas physicians from smaller communities depend more on postgraduate courses for their education and for their professional contact with other doctors.

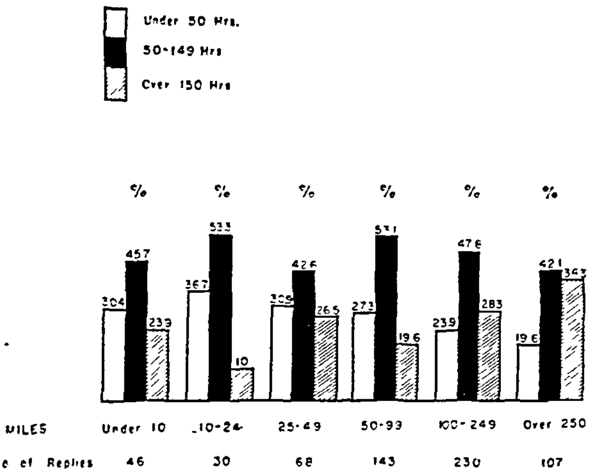

Fig. 2.—Relationship between necessary travel distance and amount of postgraduate work reported.

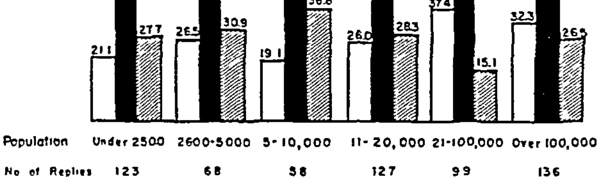

Fig. 3.—Relationship between community size and amount of postgraduate work taken in the past three years.

Physicians from the smaller and more isolated communities are forced to assume responsibility for the widest possible range of medical care and must rely on their own resources to a greater extent than physicians in larger communities. It seems reasonable to assume, therefore, that they may be motivated to increase their postgraduate work because of the challenges arising in their practices, whereas physicians in urban communities with easily available consultations for difficult problems are less strongly motivated in this regard.

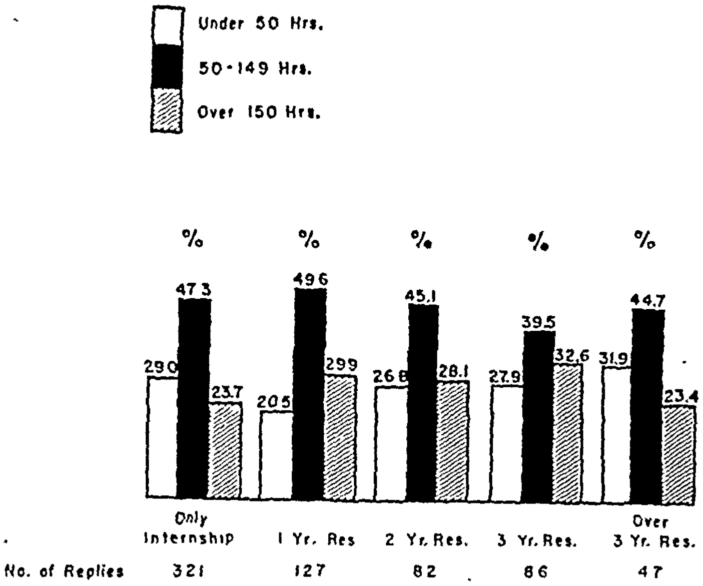

Fig. 4.—Relationship between duration of residency training and amount of postgraduate work reported.

Residency Training and Postgraduate Work

With respect to physicians throughout the country, it has been shown that there is a direct correlation between the length of residency and amount of postgraduate work taken,[6] but it was found that this correlation is not valid for Kansas. No significant difference in postgraduate activity was shown between the group which had only an internship and the group which reported a residency of more than three years' duration (fig. 4). Physicians with one year of residency training show a record of more postgraduate study than those who have had two years or more of training. The data otherwise show no significant relationship between number of years of hospital training a physician has had and the amount of postgraduate work he takes.

Financing Postgraduate Courses

Fees are only a small part of the expense incurred by physicians in attendance at postgraduate courses. Respondents were asked to estimate the cost per day (exclusive of fees) in taking postgraduate work, but they were not queried as to whether loss of income occasioned from absence from practice should be considered. This fact must be kept in mind while examining the following data. Approximately 5% of the responding physicians estimated their expenditure at postgraduate courses to exceed $100 per day. This figure indicates that loss of income was included in the estimate. However, a realistic picture of postgraduate expense may be drawn from the fact that over 65% of the respondents estimated their daily expenditure at less than $50, with 45% reporting costs of less than $25 per day. It seems probable that such estimates do not include loss of income in addition to subsistence and travel expense, and we may assume that these figures represent actual out-of-pocket expenditure involved in daily postgraduate participation. In any case, it is obvious that the fees paid are by no means the major part of the outlay which physicians make in order to avail themselves of postgraduate courses.

Conservative estimates show that fees cover only about one-half of the total expense incurred in putting on a first-class postgraduate program; the remainder is paid out of current operating expenses of medical schools and by various volunteer health agencies and grants.

In regard to the question of responsibility for the cost of postgraduate education, the physicians were overwhelmingly of the opinion that income from fees should support courses or that they should accept full financial responsibility for their own postgraduate training (86.6% so reported). Yet, in considering the data concerning opinion on current fees, a contradiction becomes apparent. Less than 5% of the respondents indicated that present fees were too low; about 70% replied that current fee schedules were all right, and nearly 7% were of the opinion that they were too high. Significantly, under 20% of those responding had no opinion on the subject. There is no great difference of opinion about postgraduate fees among physicians in rural areas as compared to their cosmopolitan colleagues (table 4).

It becomes apparent that either the facts regarding this matter are not known or they have been misrepresented. There can be no question that the majority of physicians feel that they wish to accept full financial responsibility for their postgraduate work, but when one considers the fact that over two-thirds of the doctors are of the opinion that current fees are about right, one can only conclude that, in general, they are not aware of the expense involved in presenting first-rate postgraduate courses.

Table 4.—*Opinions on Present Postgraduate Fees Relative to Community Size*

		Opinion, %			
Community Population	No. of Replies	Too High	Too Low	About Right	No Opinion
<2,500	153	7.85	7.85	68.0	16.3
2,500-5,000	91	7.70	1.1	70.3	20.9
6,000-10,000	84	2.40	4.8	76.2	16.6
11,000-20,000	163	6.10	3.1	77.3	13.5
21,000-100,000	125	8.80	4.0	63.2	24.0
>100,000	182	6.70	4.9	69.2	19.2
Unclassified	52	9.60	7.7	53.8	28.9
Total	850	6.95	4.7	69.55	18.8

While it might be reasonable to assume that physicians would willingly accept some financial support from volunteer health agencies, it is unlikely that the majority of medical men, knowing all the facts, would wish the medical schools to continue to subsidize postgraduate work at the expense of other projects. Whatever the answer, there is a clear-cut necessity for clarification of financial responsibility in the field of postgraduate medical education

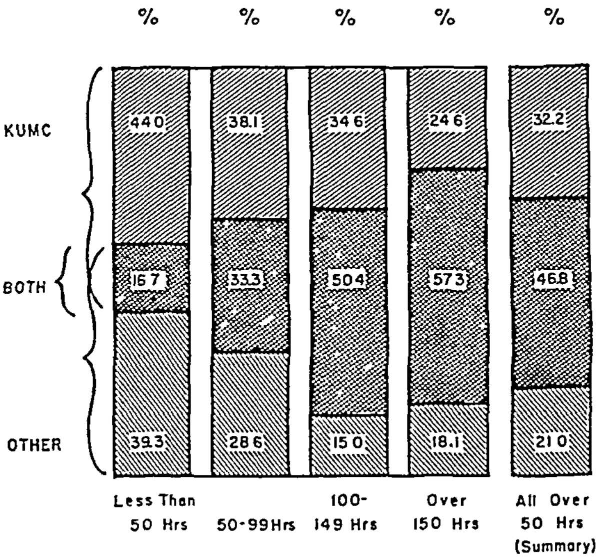

Fig 5.—Amount of postgraduate work reported in the past three years and place taken (KUMC refers to University of Kansas Medical Center).

A Look to the Future

Any medical school engaged in postgraduate education must eventually concern itself with the question of educational responsibility toward the physicians within the region which it serves. Certainly the University of Kansas has come to be regarded as fulfilling its obligations and responsibilities in this respect Whether this is true or not, objective information reveals the possibility for betterment. Figure 5 demonstrates that one-fifth of those physicians reporting adequate postgraduate hours indicated that none of their work had been done at the University of Kansas

TABLE 5—*Age of Physician in Relation to Community Size*

No of Replies	Age Group	<2,500	2,500-5,000	6,000-10,000	11,000-20,000	21,000-100,000	>100,000
163	<35, %	27 6	13 5	11 6	12 9	12 9	21 5
300	35-44, %	16 8	10 4	10 7	19 1	18 1	24 9
211	45-54, %	18 0	9 0	8 5	26 1	14 7	23 7
161	>55, %	19 25	13 0	11 2	19 9	17 4	19 25
844	Total, %	20 41	11 48	10 50	19 62	15 75	22 34

It is evident that, despite the generally high enrollment records for Kansas, there is a significant portion of the physicians in the state that are not being reached. It will be our challenge in the future to determine the reason for this situation and to direct our efforts to improving it.

Many questions arise in connection with the formulation of policy and long-range planning in an organization concerned with postgraduate education for physicians. Some of these questions seem to bear no relationship whatever to education, and, because the educators have no ready answers, opinion often serves for fact It is desirable, for example, to know where physicians in the various age groups practice. Table 5 shows that, at present, there is a tendency for younger physicians to concentrate in the smallest communities, and we find over 27% of them in these localities, as compared to only approximately 20% of all physicians Again, in table 6, we see the age distribution of physicians within each population group, it is evident that the smaller communities are served to a considerable extent by younger men. There is no doubt that some of these men have temporarily established themselves in practice in the smaller communities in an effort to recoup their finances. It is not unreasonable to conclude, however, that a fair percentage of them have become interested in rural practice as a result of the Kansas Rural Health Program and the University of Kansas Preceptorship Program, both of which stress practice in rural areas

TABLE 6—*Age Distribution of Physicians Within Population Groups*

Population	No of Replies	<35, %	35-55, %	>55, %
<2,500	166	27 1	54 2	18 7
2,500-5,000	94	23 4	54 2	22 4
6,000-10,000	88	21 6	57 9	20 5
11,000-20,000	167	12 6	68 2	19 2
21,000-100,000	136	15 4	64 0	20 6
>100,000	193	18 1	65 8	16 1

Still another aspect of this general problem is illustrated in table 7, which reveals a trend toward practice in larger communities prior to 1945 and a definite if not dramatic reversal of this trend since then.

There is an unquestioned tendency for men who have had considerable hospital (residency) training to establish practice in larger communities, and

TABLE 7—*Year of Graduation as Related to Size of Community*

Graduation, Yr	No of Replies	% in Community Size <2,500	2,500-5,000	6,000-10,000	11,000-20,000	21,000-100,000	>100,000
Since 1950	90	43 3	16 7	11 1	12 2	5 6	11 1
1945-1949	101	21 8	9 9	10 9	12 9	15 8	28 7
1940-1944	172	11 1	10 5	12 2	20 9	15 1	30 2
1934-1939	156	16 7	8 9	10 3	21 8	20 5	21 8
1930-1934	114	11 4	11 4	7 9	25 5	21 9	21 9
1924-1929	85	18 8	7 1	12 9	27 1	9 4	24 7
1920-1924	45	22 2	13 3	4 4	15 6	17 8	26 7
Before 1920	73	23 3	15 1	11 0	17 8	20 6	12 3

it is no surprise to learn, as shown in table 8, that the smaller communities have almost no representatives from this group. General practitioners are in the majority only in towns of less than 10,000 population, and they constitute the vast majority of physicians in towns of less than 5,000. In spite of this, a few full-time specialists, including certified specialists, have established themselves even in the smallest communities. It is worthy of note that partial specialists are fairly numerous in towns with 5,000 to 20,000 population.

TABLE 8.—*Years of Residency Training of Physicians Practicing in Communities of Various Sizes*

Community Population	No. of Replies	% Having Various Amounts of Training			
		None	1 Yr.	2 Yr.	3 Yr.
<2,500	166	95.8	2.4	1.8	0
2,500-5,000	94	75.5	16.0	2.1	6.4
6,000-10,000	88	54.5	21.6	9.1	14.8
11,000-20,000	167	44.3	22.2	12.0	21.5
21,000-100,000	136	32.35	18.4	16.9	32.35
>100,000	193	26.4	17.1	22.3	34.2

The past 30 years have witnessed rapid advances in medical science with a corresponding increase in the amount of graduate training that physicians have taken and an increased tendency toward specialization. From 1920 until 1944 there was a definite and continued rise in the number of men who had three years of graduate training (table 9) and in the number of men assuming full specialty practice (table 10).

With the American Academy of General Practice assuming an increased interest in graduate training for general practitioners, one may confidently predict that, while the trend away from general practice may have been halted, there will continue to be a trend toward more graduate training for all physicians. The data concerning medical graduates of the year 1950 (tables 9 and 10) are decidedly misleading, since so few of these graduates had yet had the opportunity to establish themselves as a result of their military obligations and graduate training.

TABLE 9.—*Relationship Between Year of Graduation and Amount of Residency*

Graduation, Yr.	No. of Replies	% Having Residency Training			
		None	1 Yr.	2 Yr.	3 Yr.
Since 1950	93	84.9	11.8	2.2	1.1
1945-1949	107	43.0	15.9	13.1	28.0
1940-1944	178	25.3	19.7	15.2	39.8
1935-1939	166	36.1	25.9	13.3	24.7
1930-1934	115	37.4	25.2	17.4	20.0
1925-1929	87	43.7	17.2	16.1	23.0
1920-1924	52	65.4	15.4	9.6	9.6
Before 1920	93	80.6	9.7	3.2	6.5

The general impression of a state such as Kansas is that a large number of physicians are forced to practice a fairly primitive type of medicine. If this assumption were accepted it would have considerable influence on the type of postgraduate work offered for these doctors. The facts controvert this implication, however, for over 95% of 902 respondents are members of at least one hospital staff (3.1% are not, and 1.1% gave no answer), and over 90% of them have an approved hospital available in their immediate community (5.5% do not, and 2.2% gave no answer). This is not a surprising fact when one considers that only 10 counties in the state lack a class A hospital.[7] The available hospitals vary considerably in size (table 11).

TABLE 10.—*Relationship Between Year of Graduation and Type of Practice*

Graduation, Yr.	No. of Replies	% in Each Type of Practive			
		Uncertified Specialty	Certified Specialty	Partial Specialty	General
Since 1950	103	3.9	0	7.8	88.3
1945-1949	107	17.8	18.7	7.5	56 0
1940-1944	178	10.1	41.0	17.4	31.5
1935-1939	166	13.3	28.3	20.5	37.9
1930-1934	115	14.8	32.2	22.6	30.4
1925-1929	87	17.3	28.7	20.7	33.3
1920-1924	52	13.5	19.2	30.8	36.5
Before 1920	91	22.0	13.2	30.8	34.0

The potential audience for each type of postgraduate course will inevitably have a bearing on the type of programs which are planned. Table 12 presents the breakdown according to the type of practice reported by our respondents. It will be noted in this table that partial specialists are grouped with the other specialists on the assumption that their postgraduate requirements will be similar. In other classifications they have been grouped with the general practitioners, since they must, as a group, be functioning largely as family physicians in spite of their special interests. It is interesting to note the distribution of physicians in some of the major fields. Eighty-nine doctors reported that they were specializing to some extent in internal medicine, and 42 of these men were certified internists. The proportion of certified specialists in obstetrics and gynecology is somewhat smaller, while the partial specialists seem to have greater importance in this field. This may possibly indicate that many of the physicians in general practice have developed a particular interest and facility in obstetrics, and have therefore made it an increasing part of their practice, while their colleagues have taken care of some of the other types of practice for them. Ophthalmology,

TABLE 11.—*Hospital Beds Available in Immediate Community*

Beds, No.	Replies	
	No.	%
1-15	27	3.0
16-30	111	12.3
31-50	66	7.3
50-100	148	16.4
101-200	155	17.2
200+	270	29.9

orthopedic surgery, and psychiatry are predominantly fields for specialists and, to a large extent, for certified specialists. The same is true of otolaryngology, but to a somewhat lesser extent. On the other hand, only about 25% of the men reporting surgery as their major field of interest are certified, whereas over 60% report themselves as partial specialists. This may mean that two-thirds of the physicians in the state with whom surgery is a major part of their practice are actually family physicians with a special interest (and perhaps special training) in surgery.

Table 12.—*Number of Physicians in Each Specialty*

Specialty	Certified	Uncertified	Partial Specialist	Total
Allergy	0	2	1	3
Anesthesia	9	1	10	20
Cardiovascular disease	2	1	3	6
Contagious disease	0	0	0	0
Dermatology	7	0	1	8
Gastroenterology	1	1	1	3
Internal medicine	42	26	21	89
Malignant disease	0	1	0	1
Neurosurgery	4	0	0	4
Neurology	1	2	0	3
Obstetrics-Gynecology	12	10	17	39
Occupational medicine	0	0	1	1
Ophthalmology	20	8	6	34
Orthopedics	16	1	1	18
Otolaryngology	18	14	2	34
Pathology	5	2	0	7
Pediatrics	15	6	6	27
Physical medicine	1	0	0	1
Plastic surgery	2	0	0	2
Preventive medicine	4	6	0	10
Proctology	0	1	0	1
Psychiatry	13	4	0	17
Pulmonary disease	1	1	1	3
Radiology	20	1	3	24
Surgery	37	15	92	144
Thoracic surgery	2	0	0	2
Urology	5	5	2	12
Total specialists	237	108	168	513
General practice				389
Grand total				902

These figures are of interest when compared with the national average,[8] which shows 98% of the radiologists, 92% of the ophthalmologists, 73% of the orthopedists, 72% of the pediatricians, 65% of the otolaryngologists, 64% of the neurologists and psychiatrists, 63% of the urologists, 58% of the obstetricians and gynecologists, 51% of the internists, and 48% of the surgeons to be board certified.

Conclusions

The data presented here are not necessarily applicable to other regions. There is, nevertheless, a definite need for the administrators of any program of postgraduate medical education to have as much information as possible about the requirements of their potential students in order to determine what types of courses will have the most appeal and attract more physicians to continue their medical education throughout their lifetime of practice.

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TREATMENT OF HERPES ZOSTER.—It is accepted generally that herpes zoster is a self-limited condition. The cutaneous manifestations clear spontaneously, even though scarring may remain. Also, the subjective symptoms subside without treatment in most cases. This allows for easy acceptance of new methods of therapy by enthusiasts and explains the plethora of recommended approaches. The therapeutic nihilist tends to adopt the opposite attitude and directs his treatment toward relief of symptoms by analgesics and antipruritics and lets Mother Nature take her course. Perhaps the wisest program lies somewhere between these two. . . . We found it difficult to establish a standard to measure therapeutic results in herpes zoster. Most patients do not remain under observation until the last vestige of cutaneous alteration or pain has disappeared. The ability to tolerate or ignore pain varies so much with individuals that this alone cannot be used as a criterion. It was decided that the greatest objectivity would be achieved by employing the time that the patient was so concerned that he remained under treatment as the end-point. . . . Altogether 251 patients with herpes zoster were treated by a variety of methods. . . . By our criteria it would appear that the type of treatment employed failed to shorten the course of the disease. Treatment and follow-up of herpes zoster cases is, nevertheless, desirable.—Ervin Epstein, M.D., and H. V. Allington, M.D., The Treatment of Herpes Zoster, *A. M. A. Archives of Dermatology,* October, 1957.

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THE OLD-FASHIONED TRANQUILIZER

GUEST EDITORIAL

Franklin G. Ebaugh, M.D.

Every age and stage of the history of man has its trends and its fads and its outstanding, classic achievements. These are part of what makes up the spirit of an era and are later remembered with nostalgia—or something less—as "old times." The people of the time have characteristic ways of responding to this spirit, which dictates their outer environment and much of their inner milieu as well. It is foolishness to say that people are always the same; of course they are not. However, people always have the same basic problems to solve in order to function in their environment with some degree of satisfaction and productivity. They must find a way of fitting their inner needs to the requirements of their society—of releasing tensions without losing too much satisfaction and, conversely, of satisfying their needs without storing up too much tension.

Characteristic and popular ways of doing this vary somewhat with the times. With the horse and buggy belong walks in the moonlight, square-dancing socials, wandering preachers, and sassafras tea in the spring. The Stanley Steamer brought a change in tempo—prohibition honkytonks, Dixieland jazz, and "kick-pills" stronger than sassafras tea. The last 10 years have outlined clearly where the faster and faster pace of man and his imagination have been leading—into outer space and to the heritage of atomic power to be used or abused according to the speed, again, with which man can plan, work, and grow up. By this time it is news to no one that sassafras tea does not quite do the job any more and that, if we take even a superficial look at the world we are supposed to adjust to, our built-in "kick-pills" "rev" us up as fast as the human engine can rotate.

Our modern tempo problem is one of calming down to a cruising speed rather than building up to one, and too many of us have forgotten how to shift into "low." As usual, pharmacy and chemistry have tried to meet the challenge; we have not really progressed so far from the old traveling medicine man who brewed his potions to meet physiological and psychological emergency. We have, however, lost much of the effectiveness of this fairly honorable gentlemen, because our potions do not demand that we supplement them with reassuring faith about our ability to get well and cope with life, and with reintegration of emotional strengths that will actually enable us to do so.

The now famous tranquilizer is one of modern medicine's attempts to answer the physiological tempo problem of modern man. Its uses are many and invaluable in aiding people to adjust to stresses, challenges, and major and minor traumas. Like most medicines, activities, attitudes, and emotions—like everything in life—it demands moderation to retain its positive values. Its values are those of first aid and of supplementary pain relief; like a 10-minute nap after a night without sleep, the tranquilizer is what we take until we have time to remedy the real cause of our uncomfortable condition.

How, then, do we back up the tranquilizer? How do we use the time it gives us by producing a superficially calming effect and enabling us to continue to function in spite of unbearable inner or outer tensions? We develop a real tranquility when it comes from emotional balance within—the old-fashioned kind that people had to have in order to get by because they did not have a pill. A tranquilizing pill gives the illusion of calm—physical calm without emotional calm. It is like any analgesic pain reliever that reduces the sensation of pain but does nothing about either the pain or the cause of the pain. Sometimes, however, it gives us a respite from the immediate battle, perspective on our problems, time to think, time to realign our defenses against stress, and time to find new ways of gaining satisfaction and contentment.

While adults have some measure of control over the kind of environment in which they live, none of us can live in a vacuum. We can change residence, jobs, and personal associations; we can suppress worries, avoid experiences that frighten us, retreat from a dull reality into fantasy once in a while, take a vacation, or buy a television set. Part of the time we can avoid tensions. However, each of us must still work at something, not only because no society can survive unless each member contributes, but also because, as members of the society, each of us has a built-in need to achieve something in order to retain our own self-esteem. Each of us must live somewhere and must make contact with certain other people in order to satisfy our basic needs for food, protection from the weather, and a multitude of other acquired needs of civilization. In addition, having progressed beyond the very primitive, each of us must have a role, a place to belong and fit into the scheme of the society of people. We must earn, by our behavior, some approval and acceptance from others, and, most of all, we must have respect for ourselves. These things, then, require that we cope, actively and almost constantly, with an outer environment and that we learn how to do this without disintegrating inner anxiety.

There are ways of doing this; in fact, the ways are as infinite as the number of individuals who achieve a reasonably normal, healthy adjustment. There are people who are normal and do not realize it; there are people capable of finesse of adjustment who do not achieve it, simply because they fail to use and increase their potentials for growth, courage, and endurance. Contrary to some popular ideas, "normality," in my opinion, cannot be regarded as a state of nirvana in which one experiences no tension, no dissatisfaction, and therefore no drive to respond. These moments come rarely and briefly in a lifetime if at all. To live is to be under tension; to be dissatisfied; to be anxious, sometimes unbearably so; to be angry, sometimes potently and sometimes impotently; to be everlastingly hungry, to some degree, for things that may be consciously well defined or very vague; to become depressed and discouraged; to become physically or psychosomatically ill; to worry obsessively; and to become hysterically emotional. The range of normal functioning is wide and flexible. All of these reactions and many more can fall within it, provided they do not occur in intensity, frequency, duration, or quality that disorganizes ability to function with satisfaction in the environment. One "bad day" is different from a week of bad days, and both are exceedingly different in meaning from three consecutive months of them.

Perhaps the first step in resolving a problem, reducing a symptom, or living with a stress situation when we come across it is to take a long look at what is happening to us and make an honest effort to work it out ourselves, without the aid of a pill, a doctor, or an excuse. Help is often vital and necessary, but we cannot make judgments about this until we have investigated our own resources; we must know our resources and learn how to use them before we can use pharmaceutical or psychiatric help with our problems. The individual who cannot integrate and use his own strengths, or who is not motivated to do so, is difficult to help psychiatrically. Most important, he robs himself of the extremely maturing and satisfying experience of winning a battle by himself—a battle that will make the next one easier.

After a long look has been taken at the problem, the next step is fairly well outlined. Knowing the dimensions of his problem, an individual can consider the ways of handling it—changes in his own attitudes or behavior and the possible necessity for treatment or a pill. It is then time for a long look at himself, with or without help. The individual who gets this far is fortunate. Much has been written about self-knowledge and self-acceptance. Most often, those who fail to achieve this in some degree are those whose vision is obscured by impotent anger at the very state of being alive. They are resentful, complaining, negative, or simply "beaten." Self-acceptance is first based on acceptance of living as it really is, with its tensions and anxieties; it is based on giving up the illusion of nirvana and learning, by active giving of oneself, active participation, and active effort, the satisfactions of being under tension.

With an acceptance of living as it is can come a perspective of one's role and ways of responding both to positive and to negative experiences. There will always be many points of strength, areas in which one makes a positive, effective adjustment, "fits in," and thus gives and achieves satisfaction. Negative factors will also come to light—ways of responding which do not "make sense" in dealing most effectively with a situation but which, most likely, are based on highly individual and distorted emotional and intellectual reactions. Once these factors are identified and the context of them understood, they can usually be modified so that the ways in which an individual makes life difficult for himself are reduced.

Therapy, then, is frequently self-therapy which takes place automatically and is based on established modes of reacting. It is what the normal person uses in dealing with every new experience. There ensues a systematic broadening and deepening in his response and participation with others, as well as in his own wisdom and emotional awareness. It is involved in each person's every tiny adjustment to outer stimulation or to his own thoughts and feelings. The ways in which he responds and resolves these demands for response constitute his own personality patterns.

With a reasonable degree of acceptance of his environment, acceptance and understanding of himself, and motivation both to give and to receive richer experience, an individual consistently grows and can meet tensions without a pill or a major, enduring symptom. He makes flexible use of opportunities to deal with problems in many ways; he faces them, endures them, thinks about them, grows up, gets advice, blows off steam, or draws into himself for awhile. The important point is that he tries to make an appropriate choice of reaction, one which will achieve the greatest degree of adjustment in terms of himself and of the demands of reality, in the shortest period of time. If he must blow off steam—and this is acceptable and sometimes necessary—he usually chooses the right person, the right time, and the right intensity. His explosion is realistic in terms of the provocation and effective in resolving the situation that caused it. It does not relate to something else, some time in the past, with an intensity built up over years of not being able to assert himself when he should have.

Furthermore, he can accept ambivalence, by which I mean the essential undependability and paint-pot mixtures of his emotional reactions. Relationships with others, and even with a single person, will vary in warmth and intensity, so that there will be moments of deep empathy and moments of angry withdrawal. Often there will be mixtures of the two; each relationship will be different and will vary from day to day. Yet essential securities can be maintained in these relationships, provided an individual is secure and tolerant enough of himself and others to avoid excessive vulnerability to every breeze. Only the prevailing winds are important.

Where then is real tranquility? He who achieves it must be a person who is not synthetically relieved of all the pressures of everyday living and who very much feels the minor and normal tensions, anxieties, depressions, and dissatisfactions. He will expect, accept, and perhaps even enjoy the jolts and insecurities in this business of living. He will gamble, and probably win, because he will not expect to be rewarded by the calmness of inhabiting a vacuum. He will know when he feels angry, tired, happy, or blue, and it will not take him long to find out why. Sometimes he will show his feelings, partly, with control and appropriateness. He will want to solve his problems rather than avoid them, and he will actively seek those things he needs, rather than numbing away his dissatisfactions with a capsule or a tranquilizing pill. The supply of tranquilizers will be not in the bottle but inside himself.

There is no question but that outer stress, intense and constant as it is today, reduces the flexibility and security with which any of us can adjust. When a combination of stress and emotional immaturity result in inability to gain perspective on oneself, to accept life problems, to express emotions realistically and with control, to avoid rigidity of response, to accept ambivalent interpersonal relationships, or to "live with" anxiety and other symptoms, then realigning psychotherapy, with professional help, and perhaps a tranquilizing pill also, are indicated. This realignment of strengths merely consists of putting the right reaction, attitude, behavior, or feeling in the right place and in proper perspective to achieve the maximum effectiveness in adjustment. It is the old-fashioned kind of treatment that most of us can give ourselves; it is the old-fashioned tranquilizer, and the effect is enduring.

a salute to
medical school progress
MEDICAL EDUCATION
WEEK .... April 20-26

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

"Patients are human." To tell physicians this almost seems absurd, for we have spent our entire lives studying human beings, dealing with them, and helping them fight disease and death. Yet, how often do we forget that patients really are human?

"Patients are people who should be treated as whole human beings, not as parts of a mechanism." Again, we have read or heard this advice scores of times, yet how often do we refer to a patient as a "case," a "cardiac," or the "four-o'clock appointment"?

I believe, and undoubtedly most of you do too, that each patient must be considered as an extremely important individual and that the humblest patient must be given as much personalized care as the mightiest. No patient is an "ordinary" human being; nor is he an "average" man or woman. True, he may look unimportant to the world, but we know that he feels—or wants to feel—as important as anyone else. So when he comes to see us, by his own free choice, he must be treated as someone special. He must receive our personal attention as well as our scientific skill for his medical dollar, or he is almost certain to be a dissatisfied patient.

I further believe that we in medicine build confidence in our private practice system when we put real meaning into the doctor-patient relationship.

While our first responsibility is to our patients, and not to ourselves or our system of medicine, we can promote better doctor-patient relationships and the private practice of medicine at the same time if we cultivate and strengthen the traditional warm, sympathetic, and understanding approach to patients and their problems. In other words, how can we expect the public to be concerned for our struggle to keep medicine free if we first do not show respect, interest, and consideration for them as patients?

Hundreds of speeches and articles on the value and importance of the doctor-patient relationship will not help our cause if medical care is not personalized to the fullest extent. Thus, it is our responsibility to practice this kind of care in every personal contact between us and the patient—in the office, home, and hospital.

No physician, no matter what his specialty or how high his reputation, can exempt himself from the obligation of putting a large amount of medical art into his practice. Anyone who does fails his patients, his colleagues, and the future of the private practice of medicine.

Maybe this all sounds like an "old sermon," but I sincerely believe we can gain public support for our present medical system only by our individual actions in our daily practice. The written or spoken word can merely point out, or reemphasize, why our system is the best and how physicians are keeping it that way. However, words without the good actions of all physicians are meaningless for the public.

I personally do not believe there is a physician who is completely without some art to his medicine. The rendering of personalized care is not something new for any of us. Nevertheless, we must not approach personalized medical care in a hit-or-miss fashion. We must consciously make new and renewed efforts to provide all patients with the kind of individualized attention they demand or need.

It is my belief that in medicine our true glory is in our science and our true happiness is in our art!

David B. Allman, M.D.
Atlantic City, N. J.

PROCEEDINGS OF THE PHILADELPHIA MEETING

ABSTRACT OF PROCEEDINGS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT THE CLINICAL MEETING IN PHILADELPHIA, DEC. 3-6, 1957

The actions of the House of Delegates at the Philadelphia Meeting are abstracted below so that the readers may have this information in digest form. The official proceedings will be made available in a booklet which will be sent to all members of the House of Delegates and Officers of the American Medical Association.—Ed.

The meeting of the House of Delegates in Philadelphia was called to order on Dec. 3, 1957, with an attendance of 192 delegates out of a possible 198.

Awards and Citations.—Dr. Cecil W. Clark of Cameron, La., was named the 1957 General Practitioner of the Year after his selection by a special committee of the Board of Trustees for outstanding community service.

Dr. Dwight H. Murray, Napa, Calif., immediate past-President of the Association, received the Navy Meritorious Public Service Citation, presented by Rear Adm. B. W. Hogan, Surgeon General of the United States Navy.

Remarks of the Speaker.—Dr. E. Vincent Askey, Speaker, in his address to the House, called attention to those who have voting privileges as well as those who have the privilege of the floor but who do not vote. He also mentioned the several rules in effect with respect to voting, introduction of old and new business and discussion of such business.

The Reference Committees as appointed by the Speaker are as follows:

Amendments to the Constitution and Bylaws

Leopold H. Fraser, *Chairman*, California
Kenneth C. Sawyer, Colorado
Millard D. Hill, North Carolina
George S. Klump, Pennsylvania
William D. Stovall, Wisconsin

Board of Trustees and Secretary, Reports of

Elmer G. Shelley, *Chairman*, Pennsylvania
Dwight L. Wilbur, California
James P. Hammond, Vermont
Harry L. Arnold Jr., Hawaii
Wendell C. Stover, Indiana

Credentials

A. A. Lampert, *Chairman*, South Dakota
Spencer Kirkland, Georgia
Edward B. Tuohy, Section on Anesthesiology
Stanley Weld, Connecticut
William Weston Jr., South Carolina

Executive Session

Vincent W. Archer, *Chairman*, Virginia
L. Howard Schriver, Ohio
Charles L. Shafer, Pennsylvania
Donald Cass, California
Dexter H. Witte, Wisconsin

Hygiene, Public Health, and Industrial Health

Raymond T. Holden, *Chairman*, Washington, D. C.
Cyril J. Attwood, California
Henry F. Howe, Massachusetts
E. P. Flood, New York
William F. Brennan, Pennsylvania

Insurance and Medical Service

William F. Costello, *Chairman*, New Jersey
Thomas McCreary, Pennsylvania
Milford O. Rouse, Texas
R. T. Johnstone, Section on Preventive Medicine
Thurman B. Givan, New York

Legislation and Public Relations

Percy E. Hopkins, *Chairman*, Illinois
Paul A. Davis, Ohio
Dan C. Ogle, United States Air Force
E. F. Hoffman, California
M. Shelby Jared, Washington

Medical Education and Hospitals

Jay J. Crane, *Chairman*, Section on Urology
Willard A. Wright, North Dakota
Grover C. Penberthy, Section on Surgery, General and Abdominal
Philip S. Foisie, Massachusetts
Francis C. Coleman, Iowa

Medical Military Affairs

Francis T. Holland, *Chairman*, Florida
H. Thomas McGuire, Delaware
H. Kenneth Scatliff, Illinois
John S. DeTar, Michigan
Donovan F. Ward, Iowa

Miscellaneous Business

Willis H. Huron, *Chairman*, Michigan
Frank A. MacDonald, California
Eugene Pendergrass, Section on Radiology
George F. Gsell, Kansas
Carl A. Lincke, Ohio

Reports of Officers

Durward G. Hall, *Chairman*, Missouri
Charles C. Smeltzer, Tennessee
Linwood Ball, Virginia
Jesse W. Read, Washington
Elmer P. Weigel, New Jersey

Rules and Order of Business

John N. Gallivan, *Chairman*, Connecticut
Walter C. Bornemeier, Illinois
Harold Gardner, Pennsylvania
James Q. Graves, Louisiana
J. Arnold Bargen, Minnesota

Sections and Section Work

Joseph B. Copeland, *Chairman*, Texas
Charles L. Leedham, Section on Military Medicine

Ralph E. Campbell, Section on Obstetrics and Gynecology
Wilkie D. Hoover, Oklahoma
Norman S. Moore, New York

Tellers

Edward E. H. Munro, *Chairman*, Colorado
Earl Malone, New Mexico
Albert T. Sudman, Wyoming
Milo H. Fritz, Alaska
Edward Rosenow, California

Sergeants at Arms

C. Paul White, *Master Sergeant*, Illinois
F. Sanchez-Castano, Puerto Rico
E. A. Allen, Georgia

The recommendations of the various Reference Committees as reported in this abstract were adopted by the House of Delegates unless otherwise indicated.

The Reference Committee on Reports of Officers, to which the remarks of the Speaker were referred, congratulated Dr. Askey on the model of efficiency and streamlining of the House of Delegates procedure, on the excellent advance planning with reference to the room arrangements, and on the new balloting arrangement at the June meeting. The committee urged the Speaker as a member, and the leader, of the House of Delegates to work constantly toward (*a*) maintaining equality of work in reference committee assignments even if special reference committees on the same subject would need to be appointed for specific considerations of the House; (*b*) making available the distribution of lengthy and studied reports prior to convening the House, thus alleviating the all too trying work of the reference committees; and (*c*) constantly seeking all possible liaison between the Board of Trustees and the A. M. A. officers and administration with the House of Delegates, while (*d*) reemphasizing constantly that the House of Delegates is, in fact, the policy-making body of the Association.

Address of the President.—Dr. David B. Allman, President, delivered his address, which was referred to the Reference Committee on Reports of Officers. Dr. Allman called for "more freedom, not less, in America and in the medical profession." He urged the delegates to embark on local action campaigns to enlist full community support in opposition to the Forand bill, a pending Congressional proposal which would provide hospital and surgical benefits for persons who are receiving or are eligible for Social Security retirement and survivorship payments.

The Reference Committee on Reports of Officers agreed with the President that the basic freedoms of the American way of life are predicated on incentive and the free enterprise system is at stake; that positive action concerning the Forand bill, H. R. 9467, is needed; that there must be universal opposition against and that the time for action is now. It urged the profession to join forces with all possible agencies and spare no resources including monies and personnel in an immediate and all-out fight to stem the tide. (See also discussion under Supplementary Report N of Board of Trustees, below, page 1619.)

Woman's Auxiliary.—The President of the Woman's Auxiliary, Mrs. Paul C. Craig, addressed the House of Delegates, calling attention to the annual report of the Auxiliary (see The Journal, Oct. 26, 1957, pages 1048-1049) and stating that the Auxiliary has four projects for 1958: *Today's Health*, the American Medical Education Foundation, legislation, and safety.

The Reference Committee on Miscellaneous Business, to which the annual report was referred, expressed the gratitude of the House for the work being done by the Woman's Auxiliary and wholeheartedly approved the report.

Report of Secretary.—Dr. George F. Lull, Secretary, presented his report which was referred to the Reference Committee on Reports of Board of Trustees and Secretary (see The Journal, Oct. 26, 1957, pages 976-977).

The Reference Committee called attention to the substantial increase in membership over that of 1956 and commended Dr. Lull on his report, expressing warmest appreciation for his long years of invaluable service to the Association. The Committee also commended the value of the work done by Mr. Thomas A. Hendricks in the position of Field Director.

Report of Board of Trustees.—The Speaker referred items in the report of the Board of Trustees as printed in the Handbook of the House of Delegates (see The Journal, Oct. 26, pages 977-1024) as indicated below:

Reference Committee on Reports of Board of Trustees and Secretary

Matters Referred by House of Delegates
Distinguished Service Award
Annual and Clinical Meetings
Publications of the A. M. A.
Library
Law Department
Committee on Medicolegal Problems
Division of Councils of Therapy and Research
Bureau of Medical Economic Research
Directory-Biographical Department
Machine Records Systems Department

Reference Committee on Legislation and Public Relations

Committee on Legislation
Washington Office
Department of Public Relations

Reference Committee on Hygiene, Public Health, and Industrial Health

Council on Mental Health
Council on Industrial Health
Bureau of Health Education

Reference Committee on Insurance and Medical Service

Council on Rural Health

Reference Committee on Medical Military Affairs

Council on National Defense

Reference Committee on Sections and Section Work

Council on Scientific Assembly Bureau of Exhibits

Matters Referred by House of Delegates.—*New publication.*—The Reference Committee approved the request of the Board to defer action on resolution 1 (June, 1957) recommending the establishment of a new periodical publication designed to make known the activities and services of the A. M. A. to all people in the health field, pending evaluation of the effect of recent changes in the management and organization of *Today's Health.*

Annual Meeting Place.—No action was recommended on the selection of New York for the annual meeting of the Association in 1961 and San Francisco for 1962, inasmuch as it may not be possible to hold the 1960 annual meeting in Chicago as planned.

A. M. A. Publications.—The Reference Committee noted that The Journal and the specialty journals have enjoyed an increase in subscriptions, that the change to printing by commercial firms is being successfully accomplished; and that *Today's Health* has recently been placed under new editorial management with a substantial increase in advertising. The Woman's Auxiliary was particularly commended for its valuable efforts in behalf of *Today's Health*.

Law Department.—The Law Department was commended on the diversity of its work and the excellence of its report; particularly deserving of approval was its continued liaison maintained with the American Bar Association, both nationally and locally. Attention was called to the valuable activities of the Committee on Medicolegal Problems which are distinct from though closely correlated with those of the Law Department.

Division of Councils of Therapy and Research.—The reports of the councils and committees under the Division were carefully reviewed by the Reference Committee and approval was recommended. Attention was called to the proposed establishment under the Council on Medical Physics of a special committee on atomic medicine and ionizing radiations.

Bureau of Medical Economic Research.—The Reference Committee noted that the valuable and informative studies of the Bureau will continue to be made available to the members of the Association in separate bulletins or in The Journal.

Directory-Biographical Department.—Particular attention was called to the fact that the 20th edition of the Directory will be available in September, 1958; that machine methods of printing the Directory are being adopted as rapidly as possible, and that the Directory is self-supporting by reason of subscription fees to the semimonthly Directory Report Service.

Committee on Legislation.—The Reference Committee was favorably impressed with the new state legislative key man organization of the Committee on Legislation and recommended that the members of the House of Delegates promote the functioning of the plan within their own states and territories. The inclusion of the assistance of the Woman's Auxiliary in the consideration of legislative problems was heartily endorsed. Emphasis was given to the urgent need for all representatives of American medicine to be properly informed on pertinent legislative matters and the need for better channels of communication between the Committee on Legislation, the various state and county medical societies, and individual physicians.

Washington Office.—The Reference Committee noted that the Washington Office is functioning in a positive manner and believes that its activities are of considerable value to A. M. A. members. Statements presented to the committee indicated that the Washington Office staff is establishing valuable and constructive executive and legislative contacts, thereby fostering better and more cordial relations with national organizations in official Washington.

Department of Public Relations.—The Reference Committee believes that wholehearted effort is being made to present the ideals and policies of the A. M. A. to the general public by means of all acceptable news mediums and that the Department is following an effective program in an effort to control stories, advertising, and misinformation which might mislead the general public in matters of public and personal health. Attention was directed to the National Science Fair as a worthy project which merits continued support from state and county medical societies as a form of public information. Consideration was given to more effective methods of keeping the A. M. A. membership properly informed on all matters of interest to physicians, and the Reference Committee pointed out that the responsibility for properly indoctrinating new members belongs at the local rather than at the national level.

Council on Mental Health.—The Reference Committee called specific attention to the activities of the Council with respect to medical use of hypnosis, the preparation of a manual, based on articles which have been published in The Journal, for the use of physicians treating alcoholism, sponsorship of the Annual Conference of Mental Health Representatives of state medical associations, and continued support of the Joint Commission on Mental Illness and Health, Inc.

Council on Industrial Health.—The Council was commended for its diligence in so effectively performing all of its functions, especially the development of a statement on the "Scope, Objectives, and Functions of Occupational Health Programs," which was approved by the House of Delegates in June, 1957, and is to be distributed widely through approved channels to interested agencies.

Bureau of Health Education.—The Reference Committee complimented the personnel of the Bureau on the fine performance of their duties and drew the attention of the House to the activities of the director as a member of the President's Conference on the Fitness of American Youth. It was emphasized that physicians should cooperate in their communities with well-trained physical educators and educators as a whole who are as keenly aware of the danger of a run-away physical fitness campaign as are physicians. Close cooperation between the two groups should be fruitful in protecting the youth of the country against well-meant but excessive enthusiasms.

Council on Rural Health.—The Council was congratulated on an informative report and a successful year, with the expressed hope that all delegates would familiarize themselves with its various activities.

Council on National Defense.—After consideration of the report with respect to the abolition of the military veterinary corps the Reference Committee recommended that the House of Delegates reiterate its position opposing the abolishment of the military veterinary corps and that a copy of the action be transmitted to the Secretary of Defense and to the chairman of the Senate and the House Armed Services Committee. The Committee further recommended (*a*) approval of the research program and plan of study to establish criteria for the provision of medical care of the surviving population in the event of an enemy attack on the nation; (*b*) continuation of civil defense conferences; and (*c*) approval of the Council's action with respect to the dual vulnerability of federal employees. The Committee is in accord with the Cordiner study committee report which deals with the development of a program to attract and retain the combat leadership and the scientific, professional, technical, and management skills required by the armed forces today and in the future, provided it does not impair the effectiveness of the present career incentive provisions now authorized under the Career Incentive Program.

Council on Scientific Exhibit.—The Council was complimented on its utilization of many new audiovisual techniques and special features at the annual and clinical meetings of the Association, the rapid growth in the acquisition and use of films and the increased emphasis on scientific activities as suggested in the Heller Report. The Committee encouraged the acquisition of foreign films.

Bureau of Exhibits: Attention was called to the interest of the American public in medical and health exhibits and the sincere and successful efforts of the A. M. A. to meet the needs and increase the interest, as well as to the fact that health fairs constitute a very practical and successful way for physician and auxiliary members to make positive approaches to health education in their own communities.

Supplementary Reports of Board of Trustees

Supplementary reports were presented to the House by title or by the Chairman, Dr. E. S. Hamilton:

A. Dependent Medical Care.—The Task Force on Dependent Medical Care, appointed by the Board of Trustees in June, 1956, presented a report of progress, calling specific attention to its conferences with representatives of the Office for Dependent Medical Care and the activities of its special committee in maintaining continuing liaison with that Office and the medical profession. The Task Force urged all to read the articles and reports appearing in THE JOURNAL, especially the one in the Nov. 16, 1957, issue captioned The Dependents' Medical Care Program (Public Law 569—84th Congress), on pages 1475-1483, which is in essence the report to Congress by the Office for Dependent Medical Care, giving operational data from the inception of the program to July 1, 1957. Arrangements were made for a conference to be held on Dec. 6, 1957, which will afford representatives of the state medical associations an opportunity to discuss not only their problems and questions but their desires with respect to the program.

The Reference Committee on Insurance and Medical Service recommended approval of the progress report and commended the Task Force for its efforts. It urged the Task Force to continue to keep state societies advised relative to the national program and to make every effort to appraise them with regard to new developments.

B. Commission on Medical Care Plans.—The Commission made its fifth progress report on its detailed activities and hopes to have a preliminary draft of its final report ready for consideration by the Commission at its meeting the latter part of January, 1958. It is hoped that the final report will be ready one month prior to the Annual Meeting in San Francisco so that it may be distributed to the delegates for review.

The Reference Committee on Insurance and Medical Service approved the progress report and hoped that the material developed by the Commission would be made available to the Committee on Relations with Lay Sponsored Voluntary Health Plans of the Council on Medical Service so that the work of this committee might be expedited.

C. Confidential Nature of Hospital Staff Minutes.—In accordance with action of the House of Delegates in June, 1957, on a resolution concerning the legal right of "directors of district hospitals" to examine the minutes of medical staff meetings and review the activities of medical staff committees, the Law Department submitted the following opinion: "It has long been held that the board of governors of a private hospital has the right to adopt rules and regulations relating to the qualifications and responsibilities of its staff members.

"As far as governmental hospitals are concerned, it has been held generally that governing boards may not adopt arbitrary rules, but may adopt rules and regulations that are reasonable, that tend to promote efficiency in the conduct of the hospital's affairs, and that are necessary to enable the hospital to fulfill better its obligations and duties to the public. . . . There is no reported court decision . . . involving the precise issue as to whether the medical staff of a public or private hospital may deny the board of governors access to its minutes.

"However, in the opinion of the Law Department, a resolution announcing a policy that the board of governors of a hospital should be denied access to the minutes of the medical staff would be a restriction upon the board's legal rights, duties, and obligations.

"Since the governing board is responsible for the care rendered by the hospital, it would appear that it has the legal right to adopt a rule permitting access to medical staff minutes by the governing board and knowledge of the activities of medical staff committees."

The Reference Committee on Medical Education and Hospitals recommended that the last paragraph of the report be deleted and replaced by the following: "The responsibilities of the governing board of a hospital does not abrogate the moral and legal responsibility of a physician for the medical care which he renders to his patient in the hospital."

D. Neurological Disorders in Industry.—In the area of neurological disorders the Council on Industrial Health and the Board of Trustees feel that a committee to study neurological disorders in industry, directed to developing valid and reliable information in keeping with the demands of the industrial physician, should be established as part of the Council on Industrial Health with membership from neurology and internal medicine.

Inasmuch as the industrial aspects of neurological disorders are nowhere well correlated for study by the multiplicity of existing agencies concerned with various nervous disorders, it seemed wise to the Reference Committee on Hygiene, Public Health, and Industrial Health to recommend a new committee to study neurological disorders in industry under the Council on Industrial Health.

E. Guiding Principles for an Occupational Health Program in Hospital Employee Group.—A joint committee of the American Medical Association and the American Hospital Association developed a set of guilding principles for an occupational health program for hospital employees. which have been formally approved by the A. H. A. The joint committee believes that employees in hospitals are entitled to the same benefits in health maintenance and protection as are industrial employees and that it is essential that employee health programs in hospitals be established as separate functions with independent facilities and personnel. The guides outline the desirability of an employee health service in a hospital, the considerations on which the success of such service depends, and the purpose, scope, personnel, and facilities required. (A copy of the guiding principles may be obtained by writing to the Council on Industrial Health, American Medical Association, 535 N. Dearborn St., Chicago 10).

Approval of the guiding principles as submitted was recommended by the Reference Committee on Insurance and Medical Service.

F. Use of Fluoroscopes for Fitting of Shoes.—The report recommended that for several reasons the *Association* discontinue the use of fluoroscopes for the fitting of shoes, particularly because technical studies have demonstrated that a high percentage of shoe-fitting fluoroscopes are frequently in poor repair and emit dangerous stray radiation, thereby exposing shoe sales personnel, customers, and bystanders to a hazard which they do not recognize or appreciate and which cannot be controlled effectively.

The Reference Committee on Hygiene, Public Health, and Industrial Health expressed complete agreement with the report of the Board.

G. Fluoridation.—A complete report on an exhaustive study of the subject of fluoridation of public water supplies was presented by a joint committee of the Council on Foods and Nutrition and the Council on Drugs, in accordance with the action of the House of Delegates at its meeting in Seattle, Nov. 27-30, 1956. The conclusions and recommendations of the joint committee were as follows:

1. Fluoridation of public water supplies so as to provide the approximate equivalent of 1 ppm of fluorine in drinking water has been established as a method for reducing dental caries in children up to 10 years of age. In localities with warm climates, or where for other reasons the ingestion of water or other sources of considerable fluoride content is high, a lower concentration of fluoride is advisable. On the basis of the available evidence, it appears that this method decreases the incidence of caries during childhood. The evidence from Colorado Springs indicates as well a reduction in the rate of dental caries up to at least 44 years of age.

2. No evidence has been found since the 1951 statement by the Councils to prove that continuous ingestion of water containing the equivalent of approximately 1 ppm of fluorine for long periods by large segments of the population is harmful to the general health. Mottling of the tooth enamel (dental fluorosis) associated with this level of fluoridation is minimal. The importance of this mottling is outweighed by the caries-inhibiting effect of the fluoride.

3. Fluoridation of public water supplies should be regarded as a prophylactic measure for reducing tooth decay at the community level and is applicable where the water supply contains less than the equivalent of 1 ppm of fluorine.

The Reference Committee on Hygiene, Public Health, and Industrial Health carefully reviewed the report and commended the two councils on their extensive study of the question and the excellent bibliography and tables appended to the report. The Committee was of the opinion that fluoridation of public water supplies is a safe and practical method of reducing the incidence of dental caries during childhood; it agreed with the conclusions of the joint committee of the two councils and recommended approval of the report. (The complete report may be secured at a nominal charge by writing to the American Medical Association, 535 N. Dearborn St., Chicago 10.)

H. American Medical Research Foundation.—An informational report relative to the establishment of a separate organization to be known as the American Medical Research Foundation was submitted by the Board, together with the Bylaws of the Foundation which outline the purposes, composition and details concerning its operation. In the opinion of the Board the Foundation has a great potential as an agency to *initiate and encourage* necessary medical research and to correlate and disseminate the results of studies already under way. It can receive funds from individuals, industry, or other foundations to finance beneficial medical research. The Board of Directors is composed of Drs Leonard W. Larson, Hugh H. Hussey Jr., Raymond M. McKeown, Julian P. Price, and James Z. Appel.

The Reference Committee on Reports of Board of Trustees and Secretary noted with interest and approval the establishment of the American Medical Research Foundation and believes that it has great potentiality of future value.

I. A. M. A.-A. H. A. Committee on Professional Liability.—Pursuant to the recommendation of the Board and House of Delegates a joint committee was established with the American Hospital Association in an effort to devise an effective in-hospital medical professional liability prevention program As a result of its first meeting, which was held in October, 1957, the committee recommended that (*a*) a detailed study be made of the group professional liability insurance program for hospitals which has been in effect in California for the past three years; (*b*) a review and report be prepared outlining the history, present status, and trends concerning the legal liability of charitable and municipal hospitals in cases involving professional liability; (*c*) the fourth film in the medicolegal series cover the subject of in-hospital professional liability prevention, and (*d*) the A. M. A. and the A. H. A. recommend to their constituent associations that joint medical and hospital liaison committees be appointed at the state level with purposes similar to those of the national professional liability committee.

The Reference Committee on Insurance and Medical Service approved the report and urged the state associations to take action as recommended in part (*d*) of the report

J. Civil Service Employees.—In response to a question from the House of Delegates (June, 1957) as to whether Civil Service employees of government should, for occupational health purposes, be considered the same as are employees of private industry, the Board, in cooperation with the Council on Medical Service, reported that it believed that the "Scope, Objectives, and Functions of Occupational Health Programs," as approved by the House in June, 1957, should apply to all employee groups whether in private industry or in government.

The Reference Committee on Insurance and Medical Service recommended approval of the report.

K. National Medical Research Fund.—The Board of Trustees, following the June, 1957, meeting of the House of Delegates, referred resolution 20 on a National Medical Research Fund (introduced by the Ohio delegation) to the Committee on Relationships Between Medicine and Allied Health Agencies for study, inasmuch as the resolution proposed the establishment of a single national fund to finance medical research into all diseases, to be administered by physicians, such fund to be raised by contributions from united funds or similar charitable organizations throughout the United States. The Committee reported that a representative from the Ohio State Medical Association would be called in to explain the problems in Ohio and for that reason recommended that no action be taken on the resolution at this time.

The Reference Committee on Reports of Board of Trustees and Secretary recommended approval of the report as submitted.

L. Suggested Guides to Relationships Between Medical Societies and Voluntary Health Agencies.—The Board submitted guides developed by the Committee on Relationships

Between Medicine and Allied Health Agencies primarily for the guidance of local medical societies in their relationships with voluntary health agencies. The guides outline (*a*) the nature of voluntary health agencies; (*b*) voluntary agency evaluation; (*c*) mutual obligations between medical societies and voluntary health agencies; and (*d*) the role of physicians in relation to voluntary health agencies, which are summarized as follows:

1. The voluntary health agency is now a recognized community function, and most agencies merit medical society support of their objectives though the medical society, in some instances, might press for changes in policy or procedures.
2. Medical societies and voluntary health agencies have mutual obligations. Medical societies should participate and when desired give agencies advice and counsel on the medical and civic aspects of community needs. Voluntary health agencies should establish liaison with the medical society and frame their programs to conform to sound medical practice.
3. Physicians should support voluntary health agencies within their sphere of interest and recognize whether their role is as official representative of the medical society, interested physician, or private citizen.

The Reference Committee on Miscellaneous Business recommended that the proposed guides to relationships between medical societies and voluntary health agencies be enthusiastically approved.

M. A. M. A.-A. B. A. Liaison Committee.—In response to an invitation from the American Bar Association, the A. M. A. appointed three representatives to serve on a national medicolegal liaison committee. At the first meeting of the joint committee numerous projects were discussed, including professional liability, medical expert testimony, interprofessional codes of conduct, and national legislation. It was agreed that the first project should be the preparation of a national interprofessional code for the use and guidance of physicians and attorneys and also to assist state and county bar associations and medical societies interested in negotiating written codes of this type.

The Reference Committee on Miscellaneous Business wholeheartedly approved the report and encouraged further cooperation between the two professions.

N. Forand Bill.—The Board of Trustees appointed a special Action Committee to develop and to supervise the specific actions to be undertaken by the A. M. A. with respect to the Forand bill, H. R. 9467, 85th Congress. The bill would amend the Social Security Act to provide for federal subsidization of hospitalization and surgical medical care for retired and survivorship beneficiaries under Title II (OASDI) of the Act. The Board assured the House that every legitimate means would be taken to prevent the enactment of this undesirable legislation.

The Reference Committee on Legislation and Public Relations approved the firm positive position taken in opposition to this legislation and the action of the Board in appointing a special Task Force to defeat the Forand bill. (See also Address of President, above, page 000.)

O. Medical Rating of Physical Impairment.—The Board submitted a 115-page "Guide to the Evaluation of Permanent Impairment of the Extremities and Back," developed by the Committee on Medical Rating of Physical Impairment as the first in a projected series of guides, and called attention to its intention to publish these guides in The Journal for the information of the profession.

The Reference Committee on Hygiene, Public Health, and Industrial Health commended the Committee on Medical Rating of Physical Impairment for doing a superb job on this difficult subject and expressed pleasure that the guides will be published in The Journal.

P. Scientific Assembly.—The Board recommended that the Speaker of the House of Delegates appoint a committee of five, composed of three members of the House, one from the Board, and one from the Council on Scientific Assembly, to study the advisability of changes in the Bylaws of the Association as they pertain to the Scientific Assembly.

The House, acting as a committee of the whole, adopted the recommendation of the Board.

Report of Judicial Council.—The Speaker referred the report of the Judicial Council as printed in the Handbook of the House of Delegates (see The Journal, Oct. 26, 1957, pages 1024-1025) to the Reference Committee on Amendments to the Constitution and Bylaws.

The Reference Committee commended the report to the members of the House for serious study. It called attention to the fact that the 1957 edition of the Principles of Medical Ethics was not intended to and does not abrogate any ethical principle of the 1955 edition and endorsed the statement that if local societies fail to curtail unethical practices ethics lose their effectiveness. Failure on the part of the component society to demand respect for and adherence to the Principles breeds contempt and disrespect for them. The Committee also noted that the Opinions and Reports of the Council have been abstracted and annotated and believes that this document should receive wide distribution since it will be of assistance to medical societies when called upon to resolve ethical questions within their own jurisdictions.

Report of Council on Medical Education and Hospitals.—The Speaker referred the report of the Council on Medical Education and Hospitals as printed in the Handbook of the House of Delegates (see The Journal, Oct. 26, 1957, pages 1025-1033) to the Reference Committee on Medical Education and Hospitals.

The Reference Committee noted the over-all activities of the Council and referred the members of the House to the annual report. It called attention to the four annual special issues of The Journal which outline in minute detail the current status of medical education, medical licensure, and postgraduate and graduate medical education. On behalf of the delegates and members of the A. M. A. the Reference Committee extended to the Council sincere appreciation for its endless search for an ultimate definitive answer to the many controversial matters referred to them.

Report of Council on Medical Service.—The Speaker referred the report of the Council on Medical Service as printed in the Handbook of the House of Delegates (see The Journal, Oct. 26, 1957, pages 1033-1047) to the Reference Committee on Insurance and Medical Service.

The Reference Committee approved the reports of the eight committees of the Council (Aging; Relations with Lay Sponsored Voluntary Health Plans; Prepayment Medical and Hospital Service; Federal Medical Services; Medical Care for Industrial Workers; Maternal and Child Care; Indigent Care; Medical and Related Facilities), calling special attention to the following:

Committee on Aging: The recommendation that the House of Delegates urge every state medical association to create a committee on aging or to assign this problem to an existing committee, as well as the closing paragraph of the report which reads: "It is understood that there have been a number of bills introduced into Congress for the purpose of creating a bureau of older persons. The Committee is of the opinion that the present methods of coordinating activities relating to aging within the federal government are adequate and, therefore, the Committee is opposed to the establishment of such a bureau. It is the understanding of this Committee that the Committee on Legislation of the A. M. A. is also opposed to the establishment of a special bureau."

Federal Medical Services: The Reference Committee emphasized the request of the Committee on Federal Medical Services that state and county medical societies establish formal plans, in accordance with the policy of the House, for seeing that veterans whose illness constitutes economic disaster will not be displaced by those suffering short-term remediable ills which, at the worst, constitute financial inconvenience, and urged state medical associations to report to the Council any activities in this regard. Attention was also called to the fact that the alleged abuses in Bexar County, Texas, were corrected but in recent months a change of post command resulted in the reinstitution of former practices of medical care for Civil Service employees. Appropriate steps are being taken to remedy the situation.

Indigent Care: Special attention was called to the recommendation that the House of Delegates urge every state medical association and county medical society to participate actively in the planning and operation of medical care programs for the indigent.

Medical and Related Facilities: Emphasis was given to the recommendation that the House urge the development of official liaison between medical societies and medical schools and that this mechanism be used whenever problems, questions, or policies arise that may concern the private practice of medicine or in which the medical profession may be of assistance to the schools. Liaison will not eliminate all problems, but it will avoid many and is certainly the only rational basis for solving those that do arise.

The Reference Committee expressed the hope that the Council will evolve a positive program to assure continued liaison on voluntary health insurance so that the Association may have an authoritative source for information on all kinds of insurance problems and may stimulate new developments in this field.

Supplementary Report of Council on Medical Service.—Inasmuch as some of the matters referred to in the annual report of the Council on Medical Service as it appeared in the Handbook were not completed, a supplementary report was submitted, abstracted as follows:

1. Guides for Evaluation of Management and Union Health Centers and the resolutions introduced by the Colorado delegation in June, 1956, and June, 1957. The Council recommended that the title be changed from "Guiding Principles for Evaluating Management and Union Health Centers" to "Guides for Evaluation of Management and Union Health Centers." It was further recommended that the last sentence of the third paragraph on page 6 of the Guides be deleted and that a change be made in the third paragraph on page 14 so that the sentence as revised would read: "As one aspect of this responsibility the health center is urged to provide a free choice of medical service to the patient it serves." The Council believed that the following paragraph on free choice of physician should not be included: "Eligible participants shall be given the opportunity, at the beginning of the period of their eligible participation, and at any time thereafter, to elect to receive their medical care from the Health Center Staff and Facilities or, in lieu of payment to the Health Center, assume the responsibility for providing their own medical care."

2. Preretirement Financing of Health Insurance for Retired Persons, a resolution introduced by the Pennsylvania delegation at the 1956 Clinical Session which referred to a plan prepared for the Commission on Geriatrics of the Medical Society of the State of Pennsylvania. The council felt that the Medical Society and its Commission should be commended for their interest and pioneering work in this important field but recommended disapproval of the proposed plan at this time because of (1) the inconsistency inherent in combining voluntary health insurance with a compulsory "social insurance" program; (2) the difficulties of implementation of the proposed plan; (3) lack of adequate and current statistical data; (4) the short length of time in which the voluntary health insurance plans have been experimenting with coverage for special population segments; (5) the indication of the decreasing number of aged without insurance coverage; and (6) the inability of an OASI-correlated plan to provide assistance to those older people who are most in need. It is acknowledged, nevertheless, that the medical profession has a particular interest in these problems and, along with its own sustained studies as well as with cooperation of employer groups, Blue Shield, insurance companies and other agencies, the Council recommends and encourages continued studies of the problems by the various state geriatric and insurance committees, with a view to gathering data on local problems and solutions. It welcomes the submission of suggested modes of action for the medical profession as a whole.

3. Veterans' Hometown Care Programs. Two resolutions on this subject introduced into the House of Delegates in June, 1957, were held in abeyance pending a survey being conducted by the Council. From the survey it was found that, of the 48 constituent associations replying, 10 have intermediary contracts under which a third party (usually the association itself or the state Blue Shield plan) administers the program and makes payments to the individual physicians. Four states have had intermediary contracts in the past but now have no contract. Twenty-two states have what might be called the "designated physician" method under which the Veterans Administration contracts with individual private physicians to provide care and the state association takes no part in the negotiations. Fifteen states have direct contracts with the VA under which the state association negotiates a fee schedule with the VA and provides a list of participating physicians, but the VA itself administers the plan and pays the individual physicians direct. From this it is evident that a majority of the states do not have the intermediary type of contract now in operation in California and Michigan. Since the House has no position endorsing any one of the three methods of implementing hometown care, the Council feels that a conference of state association representatives is essential; 28 states indicated they would be interested in attending such a conference.

4. Amendment to Social Security Act. In the Tennessee resolution (June, 1957) it was recommended that the Social Security Act be amended to require that any appropriation made by Congress for the care of the indigent sick of the state be allocated to the Public Health Service for reallocation to state health departments to avoid duplication of services. The Council recommended disapproval of the resolution because (1) the objective of the resolution can be achieved without an amendment of the Social Security Act since nothing in the present wording of the law prevents the state assistance agency from contracting with the state health department for administering medical care of Public Assist-

ance recipients; (2) the proposed amendment to the Social Security Act would impose on many states a system which is contrary to their present operating program and which would be unsatisfactory to the state medical associations; (3) some state departments of health would be opposed to undertaking this responsibility and many lack the administrative framework necessary for carrying out such a program; and (4) any effort to open up the Social Security Act to amendments having to do with medical care is unwise at this time.

5. Memorial to Dr. Fitzgibbon. The Council paid special tribute to Dr. J. H. Fitzgibbon, a member of the Council from 1943-1946, for his dynamic work and for his continuing interest and guidance long after termination of his official ties with the Association.

The Reference Committee on Insurance and Medical Service approved the recommendations of the Council in items 1, 2 and 4 of its supplementary report. With respect to item 3 on the VA medical care program, the Reference Committee reported that it had been informed that the Board of Trustees and the Council, through the Committee on Federal Medical Services and appropriate departments of the A. M. A., are taking steps to implement the policy of the A. M. A. with respect to VA medical care. Every effort will be made to achieve the fundamental A. M. A. objective of bringing about economy in the VA medical care program by restricting government's responsibility to veterans whose disabilities are clearly related to military service.

Committee on Medical Practices.—The Speaker referred the report of the Committee on Medical Practices as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 26, 1957, pages 1051-1052) to the Reference Committee on Miscellaneous Business.

The Reference Committee called attention to that portion of the report referring to the development of a relative value schedule for diagnostic, medical, and surgical services and a program of public education designed to bring about a better understanding of all fields of medical practice, remarking that this forms an excellent basis for continued study. The Committee stated that the Committee on Medical Practices deserved the whole-hearted cooperation and assistance of every member of the A. M. A. in its work on this difficult problem. The Committee further recommended that the term "relative value study" be used in lieu of "relative value schedule" as being less confusing.

Supplementary Report: The Committee on Medical Practices submitted three recommendations in a supplementary report, i. e.: (1) that the House of Delegates endorse the idea of the development by the Committee of a relative value schedule of medical and surgical services and at the present moment suggested the California scale as a good example because of its specific reference to the values of diagnostic and medical services as well as surgical services: (2) that the House of Delegates take definite action condemning the practice on the part of spokesmen for tangent medical groups or individual physicians of making public statements, verbal or in print, that are detrimental to public confidence in doctors; and (3) that the Department of Public Relations and the Bureau of Health Education of the A. M. A. take special cognizance of the objectives of the Committee on Medical Practices in their liaison with science writers and other writers in the medical field.

The Reference Committee on Miscellaneous Business recommended that no action be taken on the supplementary report.

Woman's Auxiliary.—The Speaker referred the report of the Woman's Auxiliary as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 26, 1957, pages 1048-1049) to the Reference Committee on Miscellaneous Business.

The Reference Committee expressed gratitude to the Woman's Auxiliary for the work it is doing and wholeheartedly approved the report.

American Medical Education Foundation.—The Speaker referred the report of the American Medical Education Foundation as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 26, 1957, pages 1049-1051) to the Reference Committee on Miscellaneous Business.

The Reference Committee referred to the many articles appearing in support of the Foundation, such as the one which appeared recently in *California Medicine*, calling attention to the tax-deductible features accruing to contributions to foundations of this type. Testimony before the Reference Committee emphasized the appreciation of the medical college deans for the contributions which they received and for the fact that they are given without restriction. With grateful appreciation the Committee approved the report of the Foundation.

Committee to Study Heller Report.—The Chairman of the Committee to study the Heller report on organization of the American Medical Association, appointed by the Speaker after the June, 1957, meeting of the House of Delegates, reviewed the activities of the committee in arriving at its report. Comments were made on several matters in the Heller Report which are administrative or executive and which are under the direction of the Board of Trustees or General Manager, but no definite recommendations regarding these items were made. The Committee, however, transmitted the following recommendations for House action:

(1) The office of Vice President be continued as an elective office.

(2) The offices of Secretary and Treasurer be combined into one office to be known as Secretary-treasurer, and that the Secretary-Treasurer be selected by the Board of Trustees from one of its number.

(3) The duties of Secretary-Treasurer be separated from those of General Manager (or Executive Vice President).

(4) The position of Executive Vice President be substituted for that of General Manager, the Executive Vice President to be appointed by the Board of Trustees as the Chief Staff Executive of the Association.

(5) The Council on Medical Education and Hospitals and the Council on Medical Service continue in all respects as standing committees of the House of Delegates as they presently are.

(6) The voting members of the Board of Trustees be limited to eleven, namely, the nine elected Trustees, the President and the President-Elect. The Vice President and the Speaker and Vice Speaker of the House of Delegates shall attend all meetings, including executive sessions, of the Board with right of discussion but without the right to vote.

(7) One Trustee be elected from each of the nine physician-population regions proposed in the Heller Report.

(8) Assistant Executive Vice President be substituted for Assistant to the Executive Vice President in the Heller Report, and also for the present position of Assistant Secretary.

(9) The Heller Report recommendation that the Committee on Federal Medical Services should be a part of the Council on National Defense be disapproved. This Committee should be retained as a committee of the Council on Medical Service as it is at the present time.

(10) In connection with one of the general recommendations that there be a redefinition of the central concept of the A. M. A. objectives and basic programs, your Committee

is well aware that much has been and is being done, but the Committee feels the matter must be continually emphasized. While much time, energy and money is spent in an all-out fight against socialized medicine, it has seemed that in our basic policy the obvious fact that medical freedom cannot long endure as an island in a sea of collectivism has been overlooked. It should be emphasized that freedom is indivisible and that where one segment of our economic, social, political or religious structure is in any manner denied its justifiable freedom, every segment is thereby injured.

As a large and influential organization, the American Medical Association has a wonderful opportunity to take the lead in a restatement of the fundamentals underlying our private competitive enterprise system and the incomparable benefits it confers upon everyone living under its sway. We could thus give courage to those who have despaired of ever achieving a return to sane economic, social, political and religious reasoning.

To formulate such a policy and to present it as living embodiment of the ideals of the American Medical Association, it is recommended that the Speaker of the House of Delegates immediately appoint a Continuing Committee on Socioeconomic Policy, this committee to consist of five members, the initial terms of two to be three years, two, two years, and one, one year. This committee shall cooperate and coordinate its activities with the Board of Trustees and report its findings and recommendations to the House of Delegates.

The Reference Committee on Amendments to the Constitution and Bylaws approved recommendations 1, 2, 3, 4, 6, 8 and 9 of the Committee to Study the Heller Report. Revisions were made in the other recommendations as follows:

(5) The Reference Committee agreed with the recommendation that the Council on Medical Education and Hospitals and the Council on Medical Service should continue in all respects as standing committees of the House of Delegates as they presently are but recommended further that the administrative direction of these councils be vested in the Executive Vice President.

(7) The Reference Committee recommended disapproval of the election of Trustees from each of the nine physician-population regions proposed in the Heller Report.

(10) The Reference Committee recommended the establishment of a joint and continuing committee of six, three from the Board of Trustees and three from the House of Delegates, appointed by the Speaker. Their duties would be to consider (*a*) redefinition of the central concept of A. M. A. objectives and basic programs; (*b*) placing more *emphasis on scientific activities;* (*c*) *taking the lead in creating more cohesion among national medical societies;* and (*d*) *studying socioeconomic problems.*

The Reference Committee further recommended that the recommendations accepted by the House be referred to the Council on Constitution and Bylaws with a request that it draft appropriate amendments for the consideration of the House at the San Francisco meeting in June, 1958.

(to be continued)

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

POSTGRADUATE COURSES

Notice of the following postgraduate courses for practicing physicians has not previously been published by the Council and is presented for information only:

A one-day program, entitled **The Role of the Obstetrician and the Pediatrician in the Prevention of Neonatal Mortality and Morbidity,** will be presented in Colorado Springs April 18, 1958, by the University of Colorado School of Medicine. Three panel discussions will be offered, at a fee for registration of $15. Further information may be obtained from the Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver 20.

An intensive course in **Applied Epidemiology** for public health physicians will be offered May 5-9, 1958, at the Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga. Lecture-discussion sessions, with use of audiovisual aids as well as seminars, are the educational methods to be used. Further information may be obtained from Chief, Communicable Disease Center, U. S. Public Health Service, 50 Seventh St., N.E., Atlanta 23, Ga., attention of Chief, Training Branch.

An intensive two-day course in **Hemolytic Disease of the Newborn** is scheduled for June 5-6, 1958, at the Children's Hospital of Philadelphia. Panel discussions, demonstrations, conferences, and case presentations will occur, with a registration fee of $50. Further information may be obtained from Dr. Irving J. Wolman, Children's Hospital of Philadelphia, 1740 Bainbridge St., Philadelphia 46.

An intensive continuous laboratory and lecture course in **Techniques and Applications of the Electron Microscope** will be offered to qualified senior biologists and medical research workers at the Electron Microscopy Laboratory, Cornell University, June 16-July 3, 1958. Application may be made to the Director, Electron Microscopy Laboratory, Rockefeller Hall, Cornell University, Ithaca, N. Y.

A course for practicing physicians, **Modern Methods in the Recognition and Treatment of Heart Disease,** will be given June 23-25 at New York University Postgraduate Medical School, 550 First Ave., New York 16. Further information may be obtained from the Associate Dean of the School.

The University of Cincinnati College of Medicine will present at the School and at Cincinnati General Hospital an intensive, continuous, one-week course for specialists in otolaryngology, **Reconstructive Surgery of the Nasal Septum and External Nasal Pyramid,** April 12-19. Eleven hour sessions daily will utilize lectures, surgical demonstrations, anatomic exercises, seminars, and case presentations. Further information may be obtained from the Department of Otolaryngology of the School.

MEDICAL NEWS

ILLINOIS

Medical History Lecture.—The annual D. J. Davis Memorial Lecture on Medical History will be given at 1:00 p. m. April 16 in room 221 in the Dental-Medical-Pharmacy Building, University of Illinois. The lecturer will be Ilza Veith, Ph.D., of Chicago, who will speak on "Oriental Medicine and its Concepts of the Soul." Dr. Veith is the president of the Society of Medical History.

Hospital News.—The seventh lecture in the eighth annual North Shore Hospital lecture series on "The Emotional Problems of Childhood" will be held in Winnetka April 2, 8 p. m. "Management of the Delinquent" will be discussed by Dr. Joseph J. Michaels, instructor in psychiatry, Harvard Medical School, Boston. The Commission on Education of the American Academy of General Practice has approved these lectures for category II credit. Physicians and allied professional personnel are invited.

New Medical Center in Hinsdale.—Construction has been completed on the one million dollar Hinsdale Medical Center, sponsored by the Kettering Family Foundation, and the building is now being occupied by more than 23 physicians and dentists. There is space for a medical library, and a health museum and health theater, designed "to further the education of the public in the areas of health and hygiene." These will be open to the public on or about May 1. The tri-level, air conditioned building will also include an x-ray and pathological laboratory, a prescription pharmacy, an optical dispensary and a stenographic service. The Health Theater will be used for lectures by members of the medical profession, and open to the public. The center is the first major project of the Kettering Family Foundation, a not-for-profit corporation organized in December, 1955, for the purpose of carrying on charitable, educational, civic, scientific, and research projects.

New Medical Center in Hinsdale

Chicago

Personal.—Dr. Josiah J. Moore, who is serving his 15th year as treasurer of the A. M. A., was recently elected president of the Institute of Medicine of Chicago, the membership of which numbers 600, and is by invitation.

Society News.—The Chicago Dermatological Society has elected the following officers: president, Dr. Samuel M. Bluefarb; vice-president, Dr. I. Myron Felsher; and secretary-treasurer, Dr. Frederick J. Szymanski, 55 E. Washington St.

Reunion for 1913 Rush Alumni.—Dr. Ralph H. Kuhns, of the Veterans Administration Regional Office, Chicago, is arranging for the 45th anniversary reunion of the class of 1913, Rush Medical College, to be held in Chicago during the weekend before the A. M. A. convention. Headquarters will be at the Hilton Hotel and the University Club. A second reunion will be held during the convention for the West-Coast alumni. For information write Dr. Ralph H. Kuhns, Suite 1445-A, The Conrad Hilton Hotel, Chicago 5.

INDIANA

Citations for Work with the Handicapped.—Drs. Kendall R. Manning, of Indianapolis, and Eli S. Jones, of Hammond, were presented citations at a meeting of the Council of the Indiana State Medical Association by Dr. Emmett B. Lamb, of Indianapolis, representing the Governor's Commission on the Employment of the Handicapped. The citations carry with them nominations for national physicians of the year for work with the handicapped, an award made yearly by the President's Committee for Employment of the Handicapped "in public recognition for exceptional contributions toward public understanding and acceptance of the physically handicapped in employment." Dr. Manning is associate professor in orthopedic surgery at the Indiana University Medical Center. He has been medical director of Crossroads Rehabilitation Center, Indianapolis, since his return from the Air Force in 1952. Dr. Jones is a past-president of the Industrial Medical Association and serves several

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Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

companies in the Calumet Area as an industrial physician. He is a delegate to the American Medical Association.

MASSACHUSETTS

Medical Research Building.—As a new step in its long-range development program, Boston University's board of trustees has voted to match a federal grant in the amount of $1,500,000 for the construction of a $3,000,000 medical school research building. The university will embark on an immediate campaign to raise the matching funds in order that construction of a building devoted to research in clinical and basic medical sciences may be started early in 1959. President Harold C. Case, LL.D., in announcing the trustees' action indicated that the new research building will involve several floors and a basement. A medical research building committee, headed by Dr. Henry M. Lemon of Weymouth, Mass., has been established at the medical school.

Seminar on Biliary Surgery in Boston.—The Third (Boston University) Surgical Service Fifth Annual Seminar, on "Biliary Surgery," will be held April 9 at Dowling Amphitheatre, Boston City Hospital. The program includes the following papers by out-of-state speakers:

Intrahepatic Choleostasis, Dr. Carroll M. Leevy, Seton Hall College of Medicine, New Jersey.
Liver Decompression by Common Bile Duct Drainage in Subacute and Chronic Jaundice, Dr. Alfred A. Strauss, Strauss Surgical Group, Chicago.
Tumors of the Gall Bladder and Biliary Tree, Dr. Richard C. Britton, Cleveland Clinic Foundation, Ohio.
Hepatic Lobectomies, Dr. Alexander Brunschwig, Cornell University Medical School, New York City.
Residual Common Duct Stones, Dr. N. Frederick Hicken, University of Utah College of Medicine, Salt Lake City.
Application of Embryological Studies to Bile Duct Surgery, Dr. Mark A. Hayes, Yale University School of Medicine, New Haven, Conn.

For information write Dr. John J. Byrne, Director, Third (B. U.) Surgical Service and Research Laboratory, Boston City Hospital, Boston.

NEW MEXICO

Physicians Take Stand on Welfare Issue.—The New Mexico Medical Society, has had its offer accepted by the state's welfare department to render free medical care to welfare patients rather than accept a further reduction in payments from the welfare fund. The schedule originally accepted by physicians represented one-fourth of a doctor's usual fee. The offer for free medical care came after the state's department of public welfare claimed that because of a gradual increase in the number of patients the medical pool fund, established in 1952 with state and federal money, was running low. The fund is used to provide medical, surgical, hospital, dental, and nursing care and drugs for welfare patients. The new offer is effective from Jan. 31 to June 30, at which time the physicians will meet with welfare department officials and review the experience.

NEW YORK

Dr. Wertz Honored.—Dr. Carlton E. Wertz, a member of the A. M. A. House of Delegates and architect of Blue Shield's "service-type" contract for prepaid medical care, was recently selected by the Buffalo *Evening News* as one of nine "Outstanding Citizens for 1957." Selections were made by the editors from nominations submitted by the public and members of the News staff. Dr. Wertz has been a member of the A. M. A. Council on Medical Service since 1952, and was president of the Medical Society of the State of New York in 1950-1951.

New York City

Lecture on Cardiovascular Disorders.—The second Bernard Sutro Oppenheimer lecture will be given in Hosack Hall of the New York Academy of Medicine April 3, 8:30 p. m., by Dr. Gunnar W. Biörck, associate professor of clinical medicine, University of Lund, and head, division of cardiology, department of medicine, Malmö General Hospital, Malmö, Sweden. Dr. Biörck's subject will be "Environment and Cardiovascular Disorders."

Dr. Taylor to Succeed Dr. Rappleye as Dean.—Dr. Howard C. Taylor Jr., chairman, department of obstetrics and gynecology, Columbia University, will succeed Dr. Willard C. Rappleye, who has been dean of Columbia's Faculty of Medicine and College of Physicians and Surgeons since 1931, and vice-president for medical affairs since 1949. Dr. Rappleye will retire on June 30. Dr. Taylor has taught at the University of Pennsylvania and at New York University, and has occupied his present post at Columbia since 1946. He is editor of the *American Journal of Obstetrics and Gynecology*, a director of the American Cancer Society, and president of the American Gynecological Society.

NORTH CAROLINA

New Program in Nursing Education.—Duke University will inaugurate a master's degree curriculum in nursing with the partial support of a seven-year grant of $238,000 from the Rockefeller Foundation. The one-year course is designed for nursing educators, administrators, and supervisors. Its primary aim is to focus the attention of students on the content of what they will have to teach or supervise in their subsequent careers rather than on the techniques of teaching. A large amount of ward experience will be a requirement of the curriculum, as well as classes in the basic sciences and in administration. Sixteen Southern states now have sixteen nursing schools at the college level. Master's degree preparation is available at only four of these institutions.

OHIO

Dr. Lull to Give Memorial Address.—Dr. George F. Lull, Chicago, Secretary, American Medical Association, will be the guest speaker at the Whitacre Memorial Address, sponsored by the Cleveland Society of Anesthesiologists. His talk is entitled "The Regulated Practice of Medicine." It will be given at a dinner meeting at the Wade Park Manor in Cleveland April 23. Interested persons should contact Dr. Sidney W. Helperin, 20665 Century Way, Maple Heights, Ohio.

Plan to Organize Dermatological Society.—The Noah Worcester Dermatological Society is a new organization formed by the department of dermatology, University of Cincinnati College of Medicine, "to sponsor scientific meetings and foster reunions of former residents and fellows, members of the faculty and members of the Cincinnati Dermatological Society." Because of the wide geographic distribution of former residents and fellows, annual meetings will be held in areas other than Cincinnati. Membership will be open to graduate dermatologists, residents, and fellows in dermatology and graduate degree scientists in other fields, regardless of any association with the University of Cincinnati. The organization and founders meeting of the society will be held at Eden Roc Hotel, Miami Beach, Fla., April 23-27. Executive and scientific sessions are planned. Organization committee members are: Drs. Donald J. Birmingham, Mitchell Ede, Leon Goldman, Edwin L. F. Higgins, Daniel J. Kindel, H. Jerry Lavender, Harry A. Nieman, Robert H. Preston, John B. Squires, Raymond R. Suskind, and Alfred L. Weiner. The society has been named for the author of the "first American textbook of dermatology," printed in Cincinnati in 1850, entitled "A Synopsis of the Symptoms, Diagnosis and Treatment of the More Common and Important Diseases of the Skin."

OKLAHOMA

Plan Professional Building in Tulsa.—Construction of a medical and dental office building in Tulsa was announced recently by Dr. Arnold H. Ungerman, president of the Twenty-First Street Building Corporation. To cost $1,250,000, the new structure is a cooperative venture by a group of Tulsa physicians and dentists. The building will accommodate 60 professional men and will contain 65,000 square feet of floor space. Walls will be of insulated porcelain steel panels, and structural columns and windows will be aluminum covered. Each suite is designed to the individual requirements of the tenant. Complete pathology and x-ray laboratories will include isotope and cobalt-bomb therapy equipment. Other members of the board of directors of the corporation are Drs. Erma O. Johnson, Jesse D. Shipp, Robert M. Shepard Jr., Harold A. White, Robert E. Nathan, Emanual N. Lubin, and Dave B. Lhevine.

TEXAS

Dallas Physicians in C. of C.—The Dallas Chamber of Commerce has more physician members than any other chamber of commerce in the United States. Membership of physicians in the Dallas chamber has grown from 92 in 1953—to a total of 340 in 1958, with 34 actively serving on committees.

Dr. May Owen Honored by Pathologists.—Dr. May Owen, of Fort Worth, has received the Caldwell award of the Texas Society of Pathologists, the top award of the society. Dr. Owen is the first woman to receive the award, and also the first woman to serve as president of the local medical society.

VERMONT

State Society Bequeathed Fund for Needy.—The portion of Mrs. Marianne G. Faulkner's will referring to the Vermont State Medical Society reads as follows: "(e) To Vermont State Medical Society, a corporation of the State of Vermont, the sum of one hundred thousand dollars ($100,000), to be kept as a permanent fund to be known as the Edward Daniels Faulkner and Marianne Gaillard Faulkner Fund and the income only to be used (a) for the relief of pecuniary distress of sick or aged members or the parents, widows, widowers, or children of deceased members, and (b) for the relief of pecuniary distress of members resulting from catastrophic natural causes."

WISCONSIN

Personal.—Dr. Philip P. Cohen, chairman, department of physiological chemistry, University of Wisconsin Medical School, Madison, will go to Oxford, England, in April under the auspices of a Commonwealth "special award in support of basic research." During the six months he will be at Oxford, he will do basic research in the biochemical aspects of inflammation.——Dr. Henrik A. Hartmann, department of pathology, University of Wisconsin Medical School, has been invited by Prof. Viktor H. Hydén, of the University of Göteborg Medical School, in Sweden, to visit that university and do investigative work on nerve cells. Prof. Hydén directs an institute specializing in spectrophotometry and cytochemistry in nerve cells. Dr. Hartmann will return July 1.

University News.—The Alpha Psi Chapter of the Phi Delta Epsilon Fraternity at the University of Wisconsin will hold its annual Arthur S. Loevenhart Lectureship April 1. The guest speaker will be

Nations, and to Elmer V. McCollum, Ph.D., professor emeritus of biochemistry at the Johns Hopkins University. Each will receive a special citation, a gold medal and $2,500. Nearly 200 scientists in the field of nutrition will attend the symposium by special invitation. The theme will be "The Nutritional 'Ages of Man'—Nutrition: Past, Present and Future." Six speakers from the U. S. and abroad will present scientific papers, each dealing with man's nutritional needs at specific stages of life. There will also be a panel discussion on changes foreseen in world nutrition in the coming century. George R. Cowgill, Ph.D., professor of nutrition at Yale University, New Haven, Conn., will preside over the symposium. The Borden Company Foundation, established in 1944, carries out a program of annual recognition awards for scientists who have performed outstanding research, and for college students who have excelled in their academic work. A total of 152 Borden Awards for research, administered by scientific and professional societies, have been presented to date.

LATIN AMERICAN

Proctology Seminar in Mexico City.—The 10th annual teaching seminar of the International Academy of Proctology will be held April 9-13 at the Del Prado Hotel, Mexico City, Mexico. About 22 papers are scheduled by authors from Mexico and the United States. A panel discussion, "Up-to-Date Surgical Proctology," will be moderated by Dr. Francisco Puente Pereda, professor of surgery, Medical School, University of Mexico, and will include the following subtitles and participants:

Colon Surgery, Dr. Samuel Gutierrez Vazquez, sub-director, Hospital De La Raza, Mexico.
Pediatric Surgery, Dr. Oscar Garcia Perez, pediatric surgeon, Hospital De La Raza, Mexico.
Proctological Surgery, Dr. Caesar Portes, clinical assistant professor in proctology, Chicago Medical School.
Colon Surgery, Dr. Jacob J. Weinstein, associate in surgery, George Washington University, Washington, D. C.
Anesthesia, Dr. Hector Garcia Perez, head, anesthesia department, Hospital De La Raza, Mexico.

Members of the medical profession whether affiliated with the academy or not are invited. For information write Dr. Alfred J. Cantor, International Secretary, International Academy of Proctology, 147-41 Sanford Ave., Flushing 55, New York.

FOREIGN

Otorhinolaryngologist Meeting in Germany.—The 1958 meeting of the German Society of Otorhinolaryngologists will be held May 19-22 in Salzburg, Austria, as a joint meeting with the Austrian Society of Otolaryngologists. The main subject will be "The Mucosa of the Upper Air Passages as Observed in Recent Research," and Prof. Dr. W. Messerklinger, of Graz, Austria, will present the principal lecture. For information write Prof. Dr. Hans Leicher, Mainz, Univ. Hals-, Nasen-, Ohrenklinik, Germany.

Laboratory of Protein Research in Japan.—The Rockefeller Foundation has appropriated $50,000 to Osaka University, Nakanoshima, Japan, to help equip a new Laboratory of Protein Research which will be directed by Prof. Shiro Akabori. The laboratory will bring into one program of coordinated research the biochemists from the Medical and Dental Schools, from the Faculty of Science, and from the Institute for Microbial Diseases. The laboratory will provide training and research opportunities for young staff members and graduate students, and facilitate cooperative use of the expensive equipment which have become increasingly necessary for advanced biochemical investigation.

"Cyto-Diagnostic" Center in Vienna.—The Austrian Cancer Society, at a press conference in Vienna Feb. 28 announced the opening of the new "Cytodiagnostic Centre" in Vienna. In cooperation with gynecological specialists throughout Austria, a concerted effort for the early detection of female cancer is to be carried out systematically. Annual examinations of Austrian women over 30 are to be scheduled, and secretion swabs sent to the newly established cyto-diagnostic laboratory and stained according to Papanicolaou's method. Reportedly, with the cooperation of the Austrian Cancer Society, the Austrian Pathological Society, and the Austrian Society for Gynecology and Obstetrics, country-wide examinations can be given annually.

EXAMINATIONS AND LICENSURE

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES, INC.

Educational Council for Foreign Medical Graduates, Inc.: The American medical qualification examination to be given henceforth twice a year for foreign medical graduates. Medical Schools in the United States and Foreign Countries, Sept. 23. Final date for filing application is June 23. Executive Director, Dr. Dean F. Smiley, 1710 Orrington Ave., Evanston, Illinois.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 17-19. Sec., Dr. D. G. Gill, State Office Building, Montgomery 4.
ARIZONA:* *Examination and Reciprocity.* Phoenix, April 16-18. Exec. Sec., Mr. Robert Carpenter, 826 Security Bldg., Phoenix.
ARKANSAS:* *Examination.* Little Rock, June 5-6. Sec., Dr. Joe Verser, Harrisburg.
CALIFORNIA: *Written. Examination.* San Francisco, June 16-19; Los Angeles, August 18-21; Sacramento, Oct. 20-23 *Oral Examination.* San Francisco, June 14; Los Angeles,

August 16; San Francisco, November 15. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 15; Los Angeles, August 17; San Francisco, November 16. Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

Colorado:* *Examination and Reciprocity.* Denver, June 10-11. Exec. Sec., Mrs. Beulah H. Hudgens, 715 Republic Bldg., Denver 2.

Delaware: *Examination and Reciprocity.* Dover, July 8-10. Sec., Dr. Joseph S. McDaniel, Professional Bldg., Dover.

Florida:* *Examination.* Miami, June 29-July 1. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami.

Georgia: *Examination and Reciprocity.* Atlanta and Augusta, June. Sec., Mr. C. L. Clifton, 224 State Capitol, Atlanta.

Idaho: *Examination.* Boise, July 14-16. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

Illinois: *Examination and Reciprocity.* Chicago, April 7-10. Superintendent of Registration, Mr. Fredric B. Selcke, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June 18-20. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

Iowa:* *Examination.* Iowa City, June 16-18. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines 19.

Kansas:* *Examination.* Kansas City, June 13-14. Sec., Dr. F. J. Nash, New Brotherhood Bldg., Kansas City.

Louisiana: *Examination and Reciprocity.* New Orleans, June 5-7. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

Maryland: *Examination.* Baltimore, June 17-20. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore 1.

Massachusetts: *Examination.* Boston, July 15-18. Sec., Dr. Robert C. Cochrane, Room 37 State House, Boston.

Michigan:* *Examination.* Ann Arbor and Detroit, June 9-11. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

Minnesota:* *Examination.* Minneapolis, April 15-17. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

Missouri: *Examination.* St. Louis, May 30-31. Ex. Sec., Mr. John A. Hailey, Jefferson City.

Montana: *Examination and Reciprocity.* Helena, April 1, Sec., Dr. Thomas L. Hawkins, 555 Fuller Ave., Helena.

Nebraska:* *Examination.* Omaha, June. Sec., Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

New Mexico:* *Examination and Reciprocity.* Santa Fe, May 19-20. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

New York: *Examination.* Albany, Buffalo, New York City and Syracuse, June 24-26. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

North Carolina: *Endorsement.* Asheville, May 5. *Examination.* Raleigh, June 16-19. *Endorsement.* Raleigh, June 17. Asst. Sec., Mrs. Louise J. McNeill, Professional Bldg., Raleigh.

North Dakota: *Examination.* Grand Forks, July 9-11. *Reciprocity.* Grand Forks, July 12. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Endorsement.* Columbus, April 1; *Examination.* June 19-21. Sec., Dr. H. M. Platter, 21 West Broad St., Columbus 15.

Oklahoma:* *Examination.* Oklahoma City, June 3-4. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

Oregon:* *Examination.* Portland, April 11-12. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

Pennsylvania: *Examination.* Philadelphia and Pittsburgh, July 8-10. Acting Sec., Mrs. Marguerite G. Steiner, Box 911, Harrisburg.

Rhode Island:* *Endorsement.* Providence, March 20. *Examination.* Providence, April 3-4. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

South Dakota:* *Examination.* Rapid City, August 12-13. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

Texas:* *Examination and Reciprocity.* Fort Worth, June 23-25. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

Utah: *Examination.* Salt Lake City, July 9-11. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

Virginia: *Examination.* Richmond, June 12-14. *Reciprocity.* Richmond, June 11. Address: Board of Medical Examiners, 631 First St., S.W., Roanoke.

Washington:* *Examination.* Seattle, July 14-16. Administrator, Mr. Thomas A. Carter, Capitol Bldg., Olympia.

West Virginia: *Examination and Reciprocity.* Charleston, April 14 and July (date not set). Sec., Dr. N. H. Dyer, State Office Bldg., No. 5, Charleston.

Wisconsin:* *Endorsement.* Madison, April 25. *Examination.* Milwaukee, July 8-10. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., 1 West Wilson St., Madison.

Wyoming: *Examination and Reciprocity.* Cheyenne, June 2. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

Alaska:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

Guam: *Subject to Call.* Act. Sec., Dr. S. F. Provencher, Agana.

Hawaii: *Examination.* Honolulu, July 14-15. Sec., Dr. I. L. Tilden, 1029 Kapiolani St., Honolulu.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: *Examination.* Juneau, Nov. 4. Sec., Dr. R. Harrison Leer, Room 204, Alaska Office Bldg., Juneau.

Arizona: *Examination.* Tucson, March 18. Sec., Mr. Herman C. Bateman, University of Arizona, Tucson.

Arkansas: *Examination.* Little Rock, May 5-6. Sec., Mr. S. C. Dellinger, Zoology Department, University of Arkansas, Fayetteville.

Colorado: *Examination and Endorsement.* Denver, May 7-8. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

Connecticut: *Examination and Endorsement.* New Haven, June 14. Exec. Asst., Mrs. Regina G. Brown, 258 Bradley St., New Haven 10.

District of Columbia: *Examination.* Washington, April 14-15. Deputy Director, Commission on Licensure, Mr. Paul Foley, 1740 Massachusetts Ave., N. W., Washington 6.

Florida: *Examination.* Miami, June 7. Sec., Mr. M. W. Emmel, Box 340, Gainesville.

Iowa: *Examination.* Des Moines, April 8. Sec., Dr. Elmer W. Hertel, Wartburg College, Waverly.

Kansas: *Examination.* Kansas City, June 3-4. Sec., Dr. R. E. Stowell, University of Kansas School of Medicine, Kansas City 12.

Minnesota: *Examination.* Minneapolis, April 1-2. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis 14.

New Mexico: *Examination.* Santa Fe, April 20. *Reciprocity.* Santa Fe, March 26. Sec., Mrs. Marguerite Cantrell, Box 1522, Santa Fe.

Oklahoma: *Examination.* Oklahoma City, April 4-5. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

South Dakota: *Examination.* Vermillion, June 6-7. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Rhode Island: *Endorsement.* Providence, April 30. *Examination.* Providence, May 14. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Texas: *Examination.* April 18-19, Austin, Galveston and Houston. Sec., Bro. Raphael Wilson, 407 Perry Brooks Bldg., Austin.

Wisconsin: *Examination.* Milwaukee, June 7. Sec., Mr. William H. Barber, 621 Ransom St., Ripon.

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*Basic Science Certificate required.

DEATHS

Alexander, Elmo, Visalia, Calif.; University of Texas School of Medicine, Galveston, 1923; an associate member of the American Medical Association; veteran of World War I; county health officer; died in the Veterans Administration Hospital in Fresno Jan. 20, aged 64, of heart disease.

Allen, Ellis Saunders Sr. ⊕ Louisville, Ky.; University of Louisville Medical Department, 1901; fellow of the American College of Surgeons; past-president of the Jefferson County Medical Society; served on the faculty of his alma mater; associated with the Children's Hospital and Kentucky Baptist Hospital, where he died Jan. 11, aged 81.

Allen, Homer Bryan ⊕ Brownwood, Texas; University of Texas School of Medicine, Galveston, 1919; fellow of the International College of Surgeons and the American College of Surgeons; past-president and secretary of the Brown-Comanche, Mills-San Saba Counties Medical Society; served on the public school board; served on the board of trustees of the Howard Payne College; associated with the Medical Arts Hospital, where he died Jan. 21, aged 67, of congestive heart failure and diabetes mellitus.

Bardill, Albert Lawrence, Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1908; died in the Nashville General Hospital Jan. 16, aged 72, of carcinoma of the liver.

Barker, Joseph Walter ⊕ Hebron, Ohio; Baltimore Medical College, 1898; formerly practiced in Newark, where he was on the staff of Newark Hospital; died in the University Hospital, Columbus, Jan. 19, aged 84.

Barrett, Channing Whitney ⊕ Montpelier, Ohio; Detroit College of Medicine, 1895; member of the American Association of Obstetricians and Gynecologists; veteran of World War I; formerly practiced in Chicago, where he was on the faculty of the University of Illinois College of Medicine and Loyola University School of Medicine; past-president of the North Side Branch of the Chicago Medical Society; past-president of the Chicago Gynecological Society; served on the staff of the Cook County Hospital in Chicago; died in the Veterans Administration Hospital, Fayetteville, Ark., Jan. 29, aged 91.

Betts, Lester, Schenectady, N. Y.; Albany (N. Y.) Medical College, 1899; an associate member of the American Medical Association; fellow of the American College of Physicians; associated with the Ellis Hospital, where he died Jan. 12, aged 83, of acute myocardial infarction.

Bell, John Dupre, Pensacola, Fla.; Tulane University School of Medicine, New Orleans, 1926; veteran of World Wars I and II and the Korean Conflict; associated with Sacred Heart, Baptist, Pensacola Maternity, Our Lady of Angels, and Escambia General hospitals; died Jan. 28, aged 58.

Bendick, John Joseph, Olyphant, Pa.; Bennett Medical College, Chicago, 1913; an associate member of the American Medical Association; served as president of the Lackawanna County Medical Society; formerly county coroner and county treasurer; at one time medical director of Lackawanna County; served as medical director of the Lackawanna County Jail and the Olyphant Schools; veteran of World War I; died in the Veterans Administration Hospital in Wilkes-Barre Jan. 27, aged 67.

Bippus, Edward Samuel, Lake Worth, Fla.; Maryland Medical College, Baltimore, 1906; an associate member of the American Medical Association; member of the West Virginia State Medical Association; formerly practiced in Wheeling, W. Va., and served as president of the Ohio County Medical Society; died Jan. 12, aged 71, of heart disease.

Breeding, Earle Griffith ⊕ Washington, D. C.; University of Maryland School of Medicine, Baltimore, 1913; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; served as president of the Washington Medical and Surgical Society; formerly on the faculty of Georgetown University School of Medicine; veteran of World War I; for many years associated with the Episcopal Eye, Ear and Throat Hospital; died in the Doctors Hospital Jan. 16, aged 69.

Beneke, John P., Cincinnati; Medical College of Ohio, Cincinnati, 1901; associated with the Deaconess Hospital; died Jan. 14, aged 80, of cerebral thrombosis and hypertension.

Benoit, Samuel Joseph ⊕ Leominster, Mass.; Baltimore University School of Medicine, 1904; veteran of World War I; died in the Veterans Administration Center, Bay Pines, Fla., Jan. 22, aged 77, of pulmonary emphysema.

Connor, Clarence Herbert, Colonel, U. S. Army, retired, Pelham Manor, N. Y.; University of Virginia Department of Medicine, Charlottesville, 1901; service member of the American Medical

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⊕ Indicates Member of the American Medical Association.

Association; fellow of the American College of Surgeons; entered the regular Army in 1902; served in the Philippines, on the Mexican border, and in World War I; retired from the Army in 1922; later health officer of Pelham Manor; died Jan. 26, aged 80.

Cooper, Alfred John, San Diego, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1925; an associate member of the American Medical Association; member of the Radiological Society of North America; veteran of World War II; held the Asiatic Pacific Theater ribbon with two bronze stars, American defense ribbon, Victory Ribbon, and Unit Citation award; died Jan. 12, aged 58.

Fabian, Abraham Appelsis ⊕ New York City; Creighton University School of Medicine, Omaha, 1934; clinical professor of psychiatry at the State University of New York College of Medicine in Brooklyn; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychoanalytic Association, American Psychosomatic Society, and the American Psychiatric Association; served as clinical director of the Brooklyn Juvenile Guidance Center; consultant, Brooklyn State Hospital; died Jan. 19, aged 48, of acute coronary thrombosis.

Fraser, Hugh Daniel, Ridley Park, Pa.; Jefferson Medical College of Philadelphia, 1897; an associate member of the American Medical Association; formerly practiced in Philadelphia, where he was on the faculty of his alma mater and the Jefferson Hospital; died in Upland Jan. 10, aged 88.

Gerzog, Bennett George, Brooklyn; Long Island College Hospital, Brooklyn, 1907; member of the Medical Society of the State of New York; specialist certified by the American Board of Otolaryngology; associated with Beth-El Hospital; consulting otologist, Maimonides Hospital and Jewish Sanitarium and Hospital for Chronic Diseases; died Jan 12, aged 71, of acute coronary thrombosis and hypertension.

Kerr, Thomas S. S., Chicago; College of Medicine and Surgery, Chicago, 1900; died Jan. 11, aged 90, of acute myocardial failure and chronic infectious cystitis.

Lamont, John G., Oklahoma City, Okla.; Trinity Medical College, Toronto, Ontario, Canada, 1895; member and at one time secretary of the North Dakota State Medical Association; for many years medical superintendent of the North Dakota State Tuberculosis Sanatorium in San Haven, and the Grafton (N. D.) State School; died Jan. 7, aged 87, of congestive heart failure and arteriosclerosis.

Moses, Henry Monroe, Brooklyn; Long Island College Hospital, Brooklyn, 1904; an associate member of the American Medical Association; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served on the faculty of his alma mater; veteran of World War I; associated with Brooklyn State Hospital, Huntington (N. Y.) Hospital, Kings County Hospital, Wyckoff Heights Hospital, Unity Hospital, Brooklyn Cancer Institute, and the Carson C. Peck Memorial Hospital, where he died Jan. 11, aged 82.

Nelson, Fritz ⊕ Colorado Springs, Colo.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1914; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; lecturer in ophthalmology at the University of Colorado School of Medicine, Denver; served during World War I; associated with Glockner-Penrose, Memorial, and St. Francis hospitals; died Jan. 2, aged 67, of aneurysm of the aorta.

O'Donoghue, James Horatio ⊕ Atlantic, Iowa; Illinois Medical College, Chicago, 1904; past-president of the Twin Lakes District Medical Society; veteran of World War I; for many years served on the board of trustees of Morningside College in Sioux City, where he was at one time head of the department of chemistry; on the staff of the Buena Vista County Hospital; died in Council Bluffs, Jan. 7, aged 90, of uremia.

Peterson, Donald Rosswell ⊕ Independence, Wis.; Marquette University School of Medicine, Milwaukee, 1930; on the staff of St. Joseph's Hospital in Arcadia; died in the Whitehall (Wis.) Community Hospital Dec. 30, aged 56, of a coronary disease due to arteriosclerosis and diabetes mellitus.

Phillipy, Frank Emory II, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1957; interned in pathology at Vanderbilt University Hospital; died Nov. 19, aged 25, of cancer.

Rogers, William Jehiel, Cleveland; Western Reserve University School of Medicine, Cleveland, 1914; member of the Ohio State Medical Association and the American Academy of General Practice; associated with the Grace Hospital, where he died Dec. 22, aged 69, of coronary occlusion.

Schück, Franz, New York City; born in Breslau, Germany, Oct. 24, 1888; Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau, Prussia, Germany, 1911; service member of the American Medical Association; in 1934 received a two-year appointment as a research fellow of the Rockefeller Foundation and became a lecturer at New York University College of Medicine; later placed in charge of neurosurgery at Queens General Hospital; during World War I won the German Iron Cross, 1st and 2nd class, and the Turkish

Medal with Crossed Swords; during World War II was called to Washington, D. C., to become medical consultant to the physical-fitness program of the United States Public Health Service; senior neurologist, New York Regional Office, Veterans Administration; died Jan. 19, aged 69, of uremia and cancer.

Sigler, Richard Roberts, Bozeman, Mont.; University of Louisville (Ky.) School of Medicine, 1924; veteran of World War I; an associate member of the American Medical Association; fellow of the American College of Surgeons; died in Mesa, Ariz., Jan 2, aged 62.

Stefanski, Helen Fadora, Chicago; Loyola University School of Medicine, Chicago, 1916; died Jan. 2, aged 68, of acute coronary thrombosis, hypertension, and arteriosclerosis.

Stone, Edna Miller ⊕ St. Louis; Barnes Medical College, St. Louis, 1909; associated with Evangelical Deaconess Hospital and St. Anthony Hospital; died in the St. Louis Chronic Hospital Jan. 9, aged 79, of myocardial infarction, arteriosclerotic heart disease, and diabetes mellitus.

Tanguay, Joseph Edgar ⊕ Woonsocket, R. I.; University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1899; past-president and secretary of the Woonsocket District Medical Society; for many years an examining physician for the school department; associated with the Woonsocket Hospital; died Jan. 5, aged 81, of coronary thrombosis, lymphatic leukemia, and diabetes mellitus.

Walker, Howard Monroe ⊕ Spartanburg, S. C.; University of Texas School of Medicine, Galveston, 1921; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; died in the Duke University Hospital, Durham, N. C., Nov. 26, aged 59, of pulmonary edema.

Wayman, Cecil Lafayette, Murfreesboro, Tenn.; Central College of Physicians and Surgeons, Indianapolis, 1903; served on the staff of the Veterans Administration Hospital; died Jan. 4, aged 80, of cardiovascular disease.

Weisberg, William Wiener ⊕ Oak Park, Mich.; University of Michigan Medical School, Ann Arbor, 1941; member of the American Academy of General Practice and the Industrial Medical Association; veteran of World War II; died in the Sinai Hospital, Detroit, Nov. 23, aged 41, of digitoxin intoxication.

West, Paul Leroy, Wenatchee, Wash.; Colorado School of Medicine, Boulder, 1902; fellow of the American Public Health Association; veteran of World War I; served as district health officer of Chelan–Douglas County; on the staff of St. Anthony's Hospital, where he died Dec. 2, aged 84, of a cerebral accident.

West, Walter Raymond ⊕ Idaho Falls, Idaho; University of Cincinnati College of Medicine, 1925, fellow of the International College of Surgeons, member of the American Academy of General Practice; served on the staff of Sacred Heart Hospital and as president of the staff of Idaho Falls Latter Day Saints' Hospital, where he died Jan. 2, aged 62, of cancer.

Willcutt, Clarence Elvin ⊕ Phoenix, Ariz.; State University of Iowa College of Medicine, Iowa City, 1909; died in St. Joseph's Hospital Jan. 8, aged 74, of dissecting aneurysm, arteriosclerosis, arthritis, and myocardial infarction.

Willis, Carson Allen, Denver; University of Maryland School of Medicine, Baltimore, 1904; an associate member of the American Medical Association; member of the West Virginia State Medical Association; formerly practiced in Huntington, W. Va., where he was associated with the Veterans Administration Hospital; died Jan. 12, aged 79, of chronic myocarditis and arteriosclerosis.

Winslow, Floyd Stone ⊕ Rochester, N. Y.; born in Henrietta, N. Y., May 17, 1880; Cornell University Medical College, New York City, 1906; for nearly 25 years a member of the House of Delegates of the American Medical Association; past-president, and for 23 years chairman of the public relations committee of the Medical Society of the State of New York; past-president of the Medical Society of the County of Monroe; the Newspaper Reporters' Association of New York honored him with its Byline Service Award, primarily for his efforts in developing a guide of cooperation between the medical profession and the various public information media, a resolution adopted by his county society when members honored him said that for "20 years he has nurtured, cajoled, inspired, and molded physician thinking about the value of public relations;" veteran of World War I; fellow of the American College of Surgeons; served as president of the Rochester Pathological Society and the International Cornell Alumni Corporation; health officer of Henrietta; for many years coroner's physician of Monroe County; in 1949 the Award of Merit for distinguished service was presented to him by the Rochester Academy of Medicine; associate in pathology, University of Rochester School of Medicine and Dentistry; consultant at the Rochester General Hospital and associate pathologist, Strong Memorial Hospital; president of the board of managers of Iola Sanitarium; died in his sleep Feb. 18, aged 77.

FOREIGN LETTERS

AUSTRIA

Surgical Treatment of Pulmonary Diseases in Children.—Dr. H. H. Hartl at the November meeting of the Society of Pediatrics of Vienna said the current opinion that the treatment of pleuropulmonary abscesses and pleural empyema in infants and young children has become a medical rather than surgical problem as the result of antibiotics can no longer be held because of the emergence of antibiotic-resistant organisms, especially hemolytic staphylococci. In a recent series of patients treated by Hartl, all staphylococci were resistant to penicillin. Resistance to tetracycline is also increasing, and as a result surgical treatment is necessary in an increasing proportion of patients. Results can be improved by more frequent and earlier employment of suction drainage which provides continuous drainage of pus, prevents its inspissation, and reduces the coagulation of fibrin. The lung reexpands, and during intrapleural therapy the concentration of antibiotics becomes maximal by virtue of the smaller surface. Furthermore, antibiotics can be instilled intrapleurally without painful puncture. Through cooperation between pediatrician and surgeon in the matter of determining the optimal time for treatment in each individual patient, the percentage of resections required was reduced from 45.4 to 20.8%.

Of 47 operations on a series of 35 children ranging in age up to two years, 35 consisted of suction drainage. Five patients died, and in nine others healing could not be obtained. In one of the two on whom pneumonectomy was performed, it was impossible to collapse the abscess, and lobectomy was necessary. If in patients with chronic empyema the pus has been removed by suction drainage, if there is no bronchial fistula, and if the lung fails to become inflated or collapses again, then under barbiturate anesthesia and with a synthetic muscle relaxant the bronchial tree is drained by suction through a bronchoscope, and intubation and open aspiration drainage are performed and the collapsed lung is inflated, using a slight positive pressure so that the air of the pleural cavity escapes through the drainage tube. The success of this procedure can be evaluated at once by auscultation or fluoroscopy. In this way it is possible to obtain a complete inflation of the lung, and this probably saved a number of children from the necessity of decortication. When the suction drainage fails in the presence of bronchial fistula or a perforated bronchiectatic cavity, decortication and pulmonary resection become necessary. Suction drainage was generally carried out for acute empyema. Those who required pulmonary resection were generally in poor condition as the result of prolonged chronic suppuration. Only close collaboration between pediatrician and surgeon can improve the results of the treatment of pleuropulmonary suppurations in children under two years old.

BRAZIL

Oral Lesions of Paracoccidioidomycosis.—At a meeting of the Associação Paulista de Medicina, Dr. José B. Fonseca reported a series of 25 patients with paracoccidioidomycosis on whom odontostomatological examinations including roentgenographic, mycological, and histopathological studies were made. He concluded that the widespread habit of rubbing the gums to relieve itching aids in the dissemination of the parasite through the lymphatic channels to the deep layers without the presence of superficial lesions of the gums. This would explain the presence of the fungus in peridental tissues without concomitant gingival ulcers in 11 of the patients. Once established in the peridental tissues, the parasite may cause intense osteolysis, cementolysis, and fibrolysis, which explains the rapid loosening of the teeth. In the body of the maxillas the speaker found a process of osteosclerosis with concomitant destruction of the alveolar apophyses. The fungus showed preference for the peridental structures, perhaps because of their abundant lymphoid tissue. In such locations it was especially resistant to sulfonamides. On the other hand in 7 pulps and in 15 granulomas resulting from pulpal lesions, as well as in patients with peridental or gingival localization of the fungus, such resistance was not found. The direct search for Blastomyces brasiliensis in the exudate from gingival pouches was positive in two patients with common periodontitis. Dentists should be sure to get a laboratory report on specimens taken from their patients and the cooperation of a physician whenever this disease is suspected.

The Coombs Test.—A study of 22 patients by Dr. G. M. Leite and co-workers (*Revista paulista de medicine*, vol. 51, 1957) indicates that the Coombs test alone is not always diagnostic. All the patients

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The items in these letters are contributed by regular correspondents in the various foreign countries.

in this series had anemia in some form. The Coombs test was positive in four of seven patients with acquired idiopathic hemolytic anemia, in two with hemolytic anemia associated with hepatic cirrhosis, in one with megaloblastic achylic anemia presenting evidence of hemolysis, in one with macroglobulinemia with hemolytic anemia, and in one with aplastic anemia unaccompanied by hemolysis. The direct and indirect tests were negative in three of seven patients with idiopathic acquired hemolytic anemia, in two with nocturnal paroxysmal hemoglobinuria, in three with constitutional spherocytic anemia, and in one with each of the following diseases: hypoplastic anemia, acute lymphatic leukemia, sickle-cell anemia, lymphosarcoma, and hypochromic anemia.

In one patient the red blood cells, after having been washed several times in saline solution, became negative to the Coombs test. In another the test became positive only after the erythrocytes were washed six times in saline solution. Presumably, in this case there was an excess of antibody, even after the third washing, with the occurrence of a zone phenomenon. The authors concluded that (1) the direct Coombs test is not positive in all patients with acquired hemolytic anemia, other serologic tests being more useful; (2) a positive direct Coombs test cannot be the basis for a definite diagnosis of hemolytic disease in the active phase and does not mean that a free antibody exists in the serum; (3) the antibody or substance responsible for the erythrocyte sensitization is, in some cases, removable by successive washings in saline solution, being able to produce a zone phenomenon; and (4) the Coombs test is negative in the congenital hemolytic form of anemia.

Occult Bone Metastases.—Dr. Vinicius Faria and co-workers (*Boletim do hospital dos servidores*, vol. 9, 1957) reported on four women 42, 43, 49, and 52 years of age, respectively, who had had a mastectomy because of cancer and who long after the operations complained of bone pains even though roentgenograms did not reveal any metastases. Zones of osteolysis were found later at these painful sites. In such patients a tentative diagnosis of bony metastasis should be made even in the absence of x-ray evidence.

FRANCE

Poliomyelitis Vaccine.—A new laboratory for the manufacture of the Lepine poliomyelitis vaccine was opened near Paris. Production will be 500,000 ampules a week, and it is hoped to increase this shortly to 1,500,000 weekly. The process, based on work done by Professor Lepine of the Pasteur Institute, involves the use of monkey kidney. When in full production the laboratory will use 100 monkeys a week for the preparation of the vaccine. About a million French children have received the Lepine vaccine, and subsequently tests for immunity have been made on about 20% of them. The tests show that the vaccine affords good protection. The number of cases of poliomyelitis in France increased last year, when 4,000 cases were reported, compared with 1,200 in the previous year.

INDIA

Prolonged Anticoagulant Treatment.—Shah and Phear (*Journal of the Association of Physicians of India*, vol. 6, January, 1958) treated 44 outpatients with anticoagulants (phenindione, bishydroxycoumarin, and ethyl biscoumacetate) for 3 to 80 months. Since 1953, the first of these drugs was used in almost all the patients, the dose varying from 25 to 150 mg. daily, according to the patient's response. After an initial period in the hospital when daily prothrombin estimations were made and the dose established, the patients were asked to attend a special outpatient clinic for further estimations at intervals from one to eight weeks. The aim was to maintain the prothrombin level at 15 to 35% of normal. Levels of less than 10% were considered dangerous and levels higher than 50% indicated that the treatment was ineffective. The patients were asked to go to the hospital immediately in the event of bleeding or untoward symptoms. They were also supplied with 10-mg. capsules of vitamin K. The patients included in the study suffered from coronary heart disease, rheumatic heart disease with multiple emboli, and recurrent peripheral thrombosis.

The results on the whole were satisfactory. One patient with recurrent peripheral thrombosis died of internal hemorrhage during the course of treatment, and the autopsy showed acute hemorrhagic pancreatitis and extensive subarachnoid hemorrhage. There were 13 patients with two or more attacks of myocardial infarction. Two patients died of a further infarction and one died of congestive failure. The remaining 10 had no further infarctions. In six patients with severe angina, no infarction occurred, and all showed an increase in effort tolerance. Of eight patients with rheumatic heart disease, one took anticoagulants for only four months and was not included in the results. In this group only one possible embolism occurred during treatment. There was a striking decrease in the frequency of emboli. The remaining 17 had recurrent peripheral thromboses. In two, venous thrombosis recurred. One died of congestive cardiac failure and there was one death due to internal bleeding, as already mentioned. Of the 44 patients, minor hemorrhagic episodes such as hematuria and epistaxis occurred in only 8 patients during treatment.

Progress in Research.—Inaugurating the annual meeting of the Indian Council of Medical Research in Lucknow, the Union Health Minister said that malaria was now a vanishing disease due to the easy availability of synthetic antimalarial drugs. Early in 1957, reports were received by the Virus Research Center in Poona, of excessive mortality among monkeys in the forests of Mysore State. Teams sent out by the Center found that villagers in that area were also dying of some kind of fever. Within one month the Center was able to show that the epidemic was caused by a virus belonging to the Russian spring and summer encephalitis group and transmitted through ticks. Field rodents in the forest area were the most likely reservoirs of infection.

Susceptibility of Mosquitoes to DDT.—Rao and Bhatia (*Indian Journal of Malariology,* vol. 11, September, 1957) stated that measurements by the World Health Organization technique of the susceptibility to DDT of caught female specimens of Anopheles culicifacies were made in widely scattered localities in the Bombay State. The areas surveyed included those unsprayed and those where spraying had been in progress for one to eight years. The type of DDT used was either the para-para or the technical. Due allowances for the higher mortalities obtained with the para-para type were made in interpreting the results and comparing with those obtained by others. The median lethal concentrations (MLC) for A. culicifacies ranged between 0.24 and 0.54% with the para-para type and between 0.5 and 0.6% with the technical. In the unsprayed areas the MLC were between 0.24 and 0.38% with the para-para type and in sprayed areas they were between 0.41 and 0.54%. No significant lowering of susceptibility was discovered even in areas where DDT had been sprayed for eight years. A vigil must be maintained because of the theoretical possibility of the sudden appearance of DDT-resistant mutants.

UNITED KINGDOM

Exercise and Slimming.—Passmore (*Lancet* 1:29, 1958) believes that exercise is a useful adjunct in the treatment of obesity in sedentary workers. His evidence is an experiment carried out on an obese dog, in which periods of confinement to its kennel were alternated with a period of light exercise and one of hard exercise. The average daily food consumption was 378 Gm. (0.8 lb.) during the first sedentary period, 331 Gm. (0.7 lb.) during the period of light exercise, 396 Gm. (0.9 lb.) during the second sedentary period, and 391 Gm. during the period of hard exercise. Over the whole period the weight fell from 25 to 22.6 kg. (55.2 to 49.8 lb.). In this animal, a short period of exercise did not increase the appetite above that of the sedentary level, as has been suggested is the case in human beings. The result supports the belief that a certain minimal level of physical activity is necessary for the appetite to function with precision and to adjust food intake to requirements. If this hypothesis can be substantiated in man, it has great practical importance in the treatment of obesity. The sedentary character of the life led by most urban people is not generally recognized, according to Passmore. Even military cadets and coal miners, members of two of the most physically active occupations, spend about 75% of their working day lying, sitting, or standing. The daily physical activity of many thousands of light workers and housewives may be below the threshold needed for appetite to function normally. They may overeat and become obese. If this is so the first duty of their physician is to prescribe a suitable regimen of physical activities.

Smoking Deterrents.—To assess the usefulness of lobeline as a smoking deterrent, Miley and White (*Brit. M. J.* 1:101, 1958) compared the efficacy of tablets containing (1) 1 mg. of lobeline hydrochloride, 15 mg. of sodium bicarbonate, 125 mg. of dried aluminium hydroxide gel, and 0.32 mg. of copper sulfate, (2) the same without the lobeline, and (3) the same as (2) without the copper sulfate. Patients were told to take two tables every four hours, up to a daily maximum of eight. The tablets were to be retained in the mouth for a few seconds, to allow the copper sulfate to have some effect. The 60 volunteers who took part in the trial were seen 7 and 14 days after the start of the trial; 25% were successful in cutting out or drastically reducing their daily cigarette consumption, regardless of the type of tablet used. Slightly over 50% were smoking less towards the end of the second week than when they first started, irrespective of the type of tablet used, and less than 25% failed to respond at all.

Identification from Immature Bones.—The first report of medicolegal identification which, in the absence of all soft parts, had to be based on the estimation of age, sex, and height from portions of immature human bones, was made by Imrie and Wyburn (*Brit. M. J.* 1:128, 1958). In March, 1956, a skull, mandible, some loose teeth, and 128 separate pieces of bone, many partially destroyed, were found scattered over an area of a few hundred square yards of hillside in the west of Scotland. From this unpromising material, the authors concluded that the bones were part of the skeleton of a boy, age of from 12½ to 13½ years, with an estimated height of 147 cm. (4 ft. 10 in.). Eleven months before the discovery of the bones, an orphan, aged 13 years 11 months, had been reported missing from an institution in the same county, and had not been found. The last height measurement of him was 136 cm. (4 ft. 6 in.), in April, 1954. As he had grown 3.2 cm. 1.2 in.) in the preceding four months, it was considered reasonable to assume that he would have been 5 to 7.5 cm. (2 to 3 in.) taller when he disappeared in April, 1955. The dental record of the missing boy corresponded to the dental condition as indicated by the eruption pattern and the dental casts of the fragments found. This strong presumptive evidence satisfied the authorities that the recovered bones were those of the missing boy.

Clean Air.—According to an article in *Lancet* (Jan. 4, 1958) the National Smoke Abatement Society on Jan. 1 changed its name to the National Society for Clean Air, in recognition of its widening scope. The Beaver committee estimated that the most heavily polluted areas could be made smokeless in 10 to 15 years if smoke-control areas could be extended by 300,000 acres yearly; but the total for 1957 was only 489, and that projected for 1958 less than 10,000 acres. Continued and increasing publicity and public education on this subject are badly needed.

Burns.—W. E. M. Wardill (*Brit. M. J.*, Jan. 4, 1958) stated that paraffin stoves are commonly used in Iraq for cooking, and accidents with these often cause extensive burns, especially of women and children. The patients are treated in surgical wards of the Royal Hospital, Baghdad, and the basis of the method is to expose the burned surfaces to the air. As soon as the patient is fit, he is placed in a warm bath containing cetrimide, and this bath is repeated every two or three days. Early ambulation is an important part of the treatment. At the first bathing loose epidermis and blisters are removed. The resulting granulating surfaces of deep burns are again exposed and bathed at intervals, and the granulations remain flat and smooth with little infection, so that exudation is minimal. With no septic absorption from the burn, fever is unusual. Antibiotics are not used routinely since they do not alter the course of healing. In a series of over 400 burned patients treated by this method skin grafting was rarely required. The most significant feature was the freedom from infection. This was probably related more to environmental conditions than to technique. During most of the year the ward temperature is between 80 and 90 F and the relative humidity between 20 and 30%. These factors probably further bacteriostasis.

Family Studies in Respiratory Infections.—Cruickshank and co-workers (*Brit. M. J.* 1:119, 1958) made a two-year clinical and bacteriological study of respiratory illness in families living in a working class area of London. All families studied consisted of two parents and three children. They were visited by a pediatrician or nurse, who, besides making clinical examinations, took nasal swabs from all members of the family every fortnight. Such possible environmental factors as maternal care, extent of outside contacts, dampness of the house, adequacy of the diet, overcrowding, and kind of clothing worn were analyzed, but only overcrowding and possibly inadequate clothing were found to be associated with the incidence of acute upper respiratory illness. The increased clinical secondary attack rate seen in the more crowded families was confirmed by the higher rate of apparent type specific transfer of pneumococci in these families. Infections appeared to be most often introduced by the youngest or preschool children, that is by the more susceptible members of the family. Even in overcrowded working-class areas the school child is the most frequently exposed to infection outside the family and is a potent disseminator of infection within the family. This view was confirmed by the greater frequency of transfer of pneumococci and the higher carrier rates of hemolytic streptococci among schoolchildren. The carrier rates for pneumococci were increased after the onset of acute coryza, but there was no evidence that the pneumococci were casually related to the latter.

Changes in the weather appeared to affect the frequency with which colds were introduced into the household and the ease of transfer. This was probably partly due to changes in host susceptibility following abrupt seasonal changes in temperature and other climatic factors. Undue susceptibility to colds was shown to be a characteristic of individual children but not of families as a whole. Sore throats often occurred without members of the family harboring hemolytic streptococci. Sore throat appeared to be a result of more than one type of infection. Sore throats and coryza occurred just as frequently in children without as in those with tonsils although the throats of those without tonsils harbored fewer streptococci.

Home Care of Elderly.—A pilot experiment in geriatric rehabilitation in the home was undertaken by the geriatric unit of the Belfast City Hospital (*Lancet*, Jan. 4, 1958). The reason for the study was a belief that some elderly invalids were getting fairly good home care but that their recovery was delayed or even prevented through lack of facilities usually found only in a hospital. Of 272 patients initially referred by their physicians 85 were thought suitable; 37 of these had hemiplegia and 28 had arthritis. In treatment the mainstay was physiotherapy, with emphasis on what the patient and his relatives could do at home. About 56 made a satisfactory recovery. The cost of the treatment averaged $2 for each visit by the physiotherapist, but to get similar results with the patient in the hospital would have cost much more.

Less than a third of the patients referred were suitable, and in making the decision for treatment, good home circumstances were considered as important as a medical condition capable of improvement. For most of the aged sick at home, who would be unlikely to benefit from treatment of this kind, the team believed that more could be done if the existing services were better coordinated. They suggested that every area should have a counseling center for the general practitioner that could provide a skilled social worker to assess the home situation, with power to focus all the necessary services where they are needed.

Brucellosis Treated with Novobiocin.—Hitherto no specific antibiotic has been effective in the treatment of brucellosis. Although improvement has been reported with chlortetracycline and streptomycin, relapse occurs later. Gost (*Lancet* 1:191, 1958) reports the successful treatment of 26 patients with novobiocin. Of these, 20 had a positive blood culture and the remaining 6 a positive agglutination test. Treatment was started with the antibiotic when the disease was at its height. By the fifth day of treatment the fever was resolved by crisis and such symptoms as headache, arthralgia, insomnia, and anorexia disappeared. The spleen gradually returned to its normal size. Doses of 250 mg. were given by mouth every four hours until the day after the temperature dropped and then every six hours for nine days. The 26 patients were discharged from hospital without symptoms and no relapse has been reported. The only side-effect noted was an urticarious reaction in two patients.

National Coal Board Medical Service.—Since the coal mines were nationalized the National Coal Board has spent $8,400,000 on the development of its medical service. It now employs 77 physicians. The bulk of the capital expenditure has gone on the building and equipping of medical centers at the mines and gas and coke works, which are also controlled by the coal board. About 50 medical centers have been built each year. By the end of 1957, 322 medical centers staffed by nurses and 570 unstaffed centers have been built. Twenty thousand men working in or associated with the coal mines have been trained to give morphine in cases of severe injury, and during the last two years 2,957 injections of morphine have been given. The annual expenditure of the coal board on medical services is about $7.50 per man annually. Later this year a chest radiography scheme will be started in all the mines, and this will increase the annual cost to $8.30 per man.

Suburban Neurosis.—There is evidence that a neurosis commonly develops in working class city dwellers who subsequently move to the suburbs. Since the war large blocks of apartments and miniature communities have sprung up in these areas. New surroundings, separation from friends and relatives, higher rents, installment buying, and increases in family have produced social and financial anxieties. Most wage-earners still work in the cities, but the women tend to remain socially isolated in their new homes. This loss of friends, relatives, and the social amenities of the city, together with financial worry, has produced a typical anxiety pattern. Martin and co-workers (*Brit. J. Prev. & Social Med.* 11:196, 1957) investigated the incidence of neurotic and psychotic illness in these emigrants from the cities. As sources of information they used mental hospital admissions, referrals to psychiatric outpatient clinics, consultations with general practitioners, and interviews with the people themselves. Examination of records of admissions to mental hospitals, covering the areas with new housing developments, showed that these admissions were more than 50% above the national average, and the incidence of neurosis was twice as high. Reactive depression in the women was the commonest condition. The discharge rate, however, was high and the period of hospitalization short. Psychiatric outpatient attendances were twice as many as in the neighboring cities.

The general practitioners reported a much higher incidence than would be expected on a national basis of psychosis, anxiety neurosis, sleep disturbances, anorexia, debility, unexplained fatigue, depression, headache, duodenal ulcer, asthma, and allergy. The incidence of most of these was double and in some conditions four times the national average. Direct interviews revealed a self-diagnosis of nervous tension in 22.3%, compared with the expected figure of 12.6%. Neurotic symptoms were most prevalent in those who had only recently moved into their new homes. These symptoms were attributable to loneliness, particularly in the women. It is argued that social planning in these new communities is just as important as town planning. The provision of social amenities might save money at present spent on psychiatric treatment.

Mass Production.—"Mass produced gas, mass produced water, and mass produced roads are all very well, but mass produced social and medical services can sometimes do as much harm as good," according to Dr. J. D. Kershaw, health officer for Colchester, in his annual report for 1956.

Chlorothiazide.—The result of clinical trials on the new oral nonmercurial diuretic, chlorothiazide (6-chloro-7-sulfanyl-1,2, 4-benzothiadiazine-1, 1-dioxide), were reported by Slater and Nabarro (*Lancet* 1:124, 1958). In vitro it inhibits carbonic anhydrase, but in vivo it causes a great increase in the rate of excretion of chloride and sodium without producing acidosis. The drug was given to patients with edema due to the nephrotic syndrome and congestive heart failure, and with ascites resulting from portal hypertension. Before treatment with chlorothiazide there was a control period of four to eight days on a diet of fixed sodium and chloride content. Blood pressure and body weight were recorded daily and electrolyte and protein levels of plasma and urine determined by standard methods. The pH of the urine was estimated immediately after collection.

Treatment with chlorothiazide was followed by a prompt and profuse diuresis, with increased excretion of chloride and sodium. In this respect it resembles the diuretic action of the organic mercurial compounds. A different effect, attributable to carbonic anhydrase inhibition, was observed in short-term studies, and this secondary action was thought to be responsible for the hypokalemia produced by chlorothiazide. This was difficult to control by oral potassium supplements. The authors believed that the drug was a most effective diuretic, which could be given for several months without any side-effects except hypokalemia. One patient, however, became resistant to it after two months. They concluded that it might be safer than the mercurials in renal cases, and that it was more effective than acetazolamide and better tolerated than aminometridine. Although chlorothiazide is an effective diuretic, a restricted salt intake was necessary in many patients. It seemed to be well tolerated, and unlike most oral diuretics it rarely produced gastrointestinal upsets. The hypokalemia produced by chlorothiazide must be borne in mind as it may potentiate the toxic effects of digitalis on the heart.

Carcinoid Tumor Secreting 5-Hydroxytryptophan.—The syndrome associated with carcinoid metastasizing argentaffinomas was well documented by Sandler and Snow (*Lancet* 1:137, 1958). Many of the manifestations can be attributed to an excess of 5-hydroxytryptamine (5-HT). The authors noted certain atypical features in some of the reported cases and in one of their own patients with carcinoid tumor. Their findings suggest that these belong to a distinct clinical group in which the tumors produce 5-hydroxytryptophan (5-HTP), which is the biochemical precursor of 5-HT. The patient had flushing attacks precipitated by food or alcohol and diminshed by antihistaminic drugs, but not the diarrhea commonly associated with carcinoid tumor. 5-HT was present in the urine with about five times as much 5-HTP and smaller amounts of 5-hydroxyindoleacetic acid. Chromatograms of the patient's urine bore a striking resemblance to those obtained from the urine of six normal subjects given 5-HTP intravenously. It therefore seemed likely that in this case the principal metabolite of the tumor was 5-HTP, which, when released into the bloodstream, was partially decarboxylated to 5-HT. There was also an increased urinary excretion of histamine, which could be accounted for by the fact that 5-HT is a histamine liberator. There may be a distinct clinical group of carcinoid tumors providing 5-HTP rather than 5-HT.

Cancer Education.—A report appeared in the *British Medical Journal* of Jan. 11 on the Manchester Committee on Cancer, which has completed the fifth year of an experiment in public education. The campaign emphasized the hopeful outlook for cancers of the breast, cervix uteri, and skin. In towns of Southeast Lancashire and North Cheshire where the scheme has been conducted, over 700 lectures have been given to lay organizations and summarized in local newspapers. Publicity has been maintained at a high level of intensity so that any ill-effects would have come to the notice of general practitioners. The opinions of physicians practicing in the areas concerned were gathered. While only one was skeptical of the usefulness of the scheme, not one thought the scheme harmful. None has been caused any work he considered unnecessarily onerous. The results obtained in this inquiry indicated that it is possible to saturate a given area with carefully devised publicity over a period of years with little or no undesirable consequence for either patient or physician.

Radiation Hazards.—The chairman of the Atomic Energy Authority reporting on the accident at the Windscale plant in October recommended the formation of a committee to study and report on health and safety organization in the A. E. A. This committee (*Brit. M. J.* [Jan. 18] 1958) recommended closer cooperation between the eight government departments concerned with atomic energy and more efficient integration of the services of the expert scientific advisers. There are difficulties in staffing in the field of health physics, as it is a recent specialty requiring men trained in medicine, radiobiology, engineering, and general science. The committee suggested that a supply of such men be trained. In such accidents as the one at Windscale, fission products might be released into the atmosphere, and the fall-out of fission products, the degree of contamination of the surrounding pastures and water supplies, and a consideration of the half-lives of the fission products concerned will indicate the potential long-term hazard. Isotopes of strontium and iodine are most important, as both are deposited on pasture and soil, the strontium becoming incorporated in soil and plants. Public knowledge is still lacking on this subject, which makes public relations difficult, people usually fearing what they do not understand.

CORRESPONDENCE

RESEARCH CONTROLS

To the Editor:—The activities of the American Association of Dental Editors described below had their origin in a disturbing review of the literature by O. B. Ross Jr. appearing in THE JOURNAL (145:72 [Jan. 13] 1951). Ross, in a paper entitled "Use of Controls in Medical Research" reported that of 100 unselected consecutive papers appearing in highly respected medical journals, in only 27% was the research well controlled, in 45% it was uncontrolled, in 18% it was inadequately controlled, and in 10% no controls were possible. The Ross report also emphasized that the experimental control "is not just a tool of highly specialized teachers or research men" but that men at the grass roots of medical practice and theory "must learn to evaluate various treatments and procedures."

The Ross study demonstrated that, wherever the responsibility lies, the job of rejecting manuscripts for publication which do not report suitable experimental controls is not being carried out thoroughly enough. Thus, a study was undertaken (1) to develop the thesis of the essentiality of experimental controls in research; (2) to examine the legitimate possible exceptions or exemptions from this general principle; (3) to delineate at least some of the reasonably acceptable forms of control procedures; (4) to correlate this material into a message encouraging the proper use of controls in research and discouraging the lack or inadequate use of controls; (5) to direct this codification of principle to authors, journal readers, consultants, researchers, and editors; and (6) to provide a backbone of opinion which would serve subsequently to support editors and others accorded the unenviable task of either approving or disapproving the submission of manuscripts for publication or of accepting or rejecting these for publication.

To this end the following resolution was drafted and submitted for the consideration of a distinguished consultant panel of research workers and editors in the fields of medicine, dentistry, and public health, and ultimately for consideration by the American Association of Dental Editors: "In *research investigations, the design of the study* should include adequate experimental controls. Acceptance for publication of a report of an investigation performed without controls when controls were possible should, if justified, be considered an exception to this principle rather than a sound general practice. The ultimate responsibility (in terms of publication) for allowing such an exception should rest with the editor."

The American Association of Dental Editors *unanimously passed the above resolution at its* annual meeting in Miami Beach, Fla., Nov. 2, 1957. Since, as an organization of editors, we are urging our members to emphasize the importance of experimental "controls" in their deliberations concerning the acceptability of manuscripts for publication, we felt that other individuals who contribute to and edit the scientific literature would desire to be apprised of the action this association has taken. We sincerely hope that this resolution will assist in further improving the standards of the scientific literature.

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PRESCRIPTION LABELS

To the Editor:—The introduction of drop medication on a large scale has introduced an unforeseen complication. Parents, accustomed to using drops directly on the area of involvement, i. e., the nose, ear, eye, etc., unwittingly conclude that the newer oral antibiotics are designated for local use. Despite instructions to pharmacists to indicate that the medicament is to be given by mouth, it not infrequently comes to pass that drop medicaments intended to be used orally are instilled in ears, noses, and even eyes. Obviously, this eventuality is fraught with a multiplicity of potential hazards. Many physicians have related such difficulties.

Just as "poison" labels are placed conspicuously on prescriptions of a toxic nature, labels indicating "by mouth," "for ears," "for eyes," etc., should be placed on prescriptions to avoid errors in routes of administration. Several pharmacists have said that the designation "Label as Such" in the instructions of the prescription indicates that the contents of the prescription are to be placed on the label. Most pharmacists state that they are willing to cooperate, whereas others state that such a procedure constitutes not only a violation of ethics but also a potential menace in that self-medication will be encouraged. The purpose of such designations resides in the need to assist the physician in telephone checkups when the records are not immediately available to him. I personally feel that labeling of prescriptions, when feasible, is of great assistance to the physician as a means of follow-up.

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LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Malpractice: Foreign Substance Left in Body—Res Ipsa Loquitur.—This was an action for damages for injuries caused by the alleged negligence of the defendant physician. From a directed verdict for the defendant, the plaintiff appealed to the district court of appeal, fourth district, California.

On April 5, 1937, the defendant physician performed an abdominal operation on the plaintiff to correct the position of her uterus and to free adhesions. He testified in this connection that he found that the entire pelvis was filled with a mass of adhesions which anchored the uterus tightly; that these were "freed-up" sufficiently to do the work that was necessary to replace the uterus to its normal position; that the tubes and ovaries were "freed-up" and that an appendectomy was also performed prior to closing due to the fact that they found considerable adhesions and some evidence of chronic scarring about the appendix; that he used surgical gloves; and that before closing, a sponge count was made by the nurse.

During 1938-1940 the plaintiff developed nagging back pains an inch or two above the bottom of her spine, and on July 24, 1953, her coccyx was removed, after which she was relieved of the back pains for a time but later they became worse. In May, 1953, she had a cautery to her cervix for a cervical discharge and in November had a hemorrhoidectomy. On July 7, 1954, Dr. Ragen, who had performed all the 1953 operations, performed an operation for the repair of a cystocele. This operation was performed by entering the vaginal opening and making an inverted T-shaped incision through the mucosa of the cervix on the anterior portion, separating the mucosa, and realigning or drawing them together so as to shorten and make a stronger covering. After this operation the plaintiff had some bleeding and was taken back to surgery. The bleeding was controlled by a product known as oxycel (a synthetic or plastic cloth-like substance which is placed in the wound to absorb the blood and is left to absorb itself). On Jan. 3, 1955, the plaintiff was hospitalized with a diagnosis of cervical stenosis and pyometritis. On Jan. 24, 1955, she was again hospitalized with a diagnosis of right ovarian cyst. A cyst was removed by Dr. Ragen on the next day. It was the size of a small orange and was found to contain a piece of foreign matter approximately 1.5 in. long, 0.5 in. wide, and 0.12 in. thick. Dr. Ragen's assistant testified that he thought it was a piece of either glove, rubber, or rubber tube but that he was not positive that it was rubber.

The pathologist who examined the cyst reported that in it there was a "sponge, that is a piece of gauze in which there was a thin yellow brown material, it was squarish shape, it was about, as I recollect, about a half inch and it looked like rubber and I looked at it microscopically and it had sort of a network that had been pressed through it . . . it was a foreign body"; that "there is nothing like that grows in people"; that there was no way of determining accurately the length of time the foreign substance was in the body; that cysts with a purulent center around a foreign body have been known to be in a human body for months and perhaps years; that considering the place where the foreign substance was found, it could not have gotten into the body through any orifice in the head, through the nose, ears, or mouth, and that there was no other orifice in the human body in which the piece of rubber could have been inserted so that it could have made its way to the place where it was found in surgery; that it was possible that foreign material left in the body in a cystocele operation might cause infection and erode through the peritoneum. One of the experts testified in response to a hypothetical question embodying the plaintiff's case that in his opinion the foreign substance involved must have been introduced at the time of an operation and it was more apt to have been introduced at the time of the cystocele operation.

The court of appeal said that, viewing the evidence in the light most favorable to the plaintiff, accepting every inference that legitimately may be drawn in her favor, and disregarding evidence which is in conflict with evidence favorable to her, we cannot hold that there is no evidence of sufficient substantiality to support a verdict in favor of the plaintiff if such a verdict were given. The only reasonable inference which can be drawn from the evidence is that the foreign substance found in the cyst removed from the plaintiff was left in her body during an operation which was performed on her. While there was some evidence that it was possible that the foreign substance might have been left in the plaintiff's body during the cystocele repair performed in 1954, this evidence merely presented a question of fact for the jury.

The plaintiff contended that the doctrine of res ipsa loquitur is applicable in this case. The defendant argued that the doctrine is inapplicable because of the evidence that the foreign substance could have been left in the plaintiff's body at some other time and place than in the operation by the defendant in 1937. However, said the court, this operation was under the exclusive control of the defendant and the plaintiff was in no way responsible for the foreign material left in her abdomen. There was evidence that there was a mere possibility that the substance was left in her body at the cystocele repair performed in 1954. The court said that the doctrine of res ipsa loquitur will not ordinarily apply if it is equally probable that the negligence was that of someone other than the defendant, the plaintiff need not exclude all other persons who might possibly have been responsible where the defendan't negligence appears to be the more probable explanation of the accident.

The court therefore held that the case should have been submitted to the jury and the directed verdict in favor of the. defendant physician was reversed. *Mondot* v. *Vallejo General Hospital, 313 P (2) 78 (Calif., 1957).*

Permanent Wave: Res Ipsa Loquitur.—This was an action for damages for burns resulting from the alleged negligence of one of the operators in the defendant beauty salon. From a judgment for the defendant, the plaintiff appealed to the court of appeals of Ohio.

The plaintiff went to the defendant beauty salon for a cold wave permanent, during the application of which the defendant's agent used a preparation and solution called Willat Dynacurl Cold Wave Lotion. Some of this solution was spilled on the plaintiff's face, neck, and forearms. About six hours later the area was covered with red blotches, in the form of contact dermatitis, and this condition remained for about three weeks. At the trial, the plaintiff offered proof tending to establish that the defendant's agent had been negligent in spilling the solution on the plaintiff. The defendant then offered evidence to establish that the plaintiff was allergic to some of the chemicals contained in the solution used and that this allergic reaction was the sole cause of the plaintiff's injuries.

The plaintiff's principal complaint on appeal was directed at the refusal of the trial court to give the jury an instruction on the doctrine of res ipsa loquitur. We are of the opinion, said the court of appeals, that the trial court did not err in refusing the request, for the record discloses facts upon which it could be inferred that the plaintiff's injuries were caused by her own allergy in addition to any facts which might permit an inference that the defendant's operator was negligent. This evidence, said the court, was insufficient to do more than raise a possible inference, but it was sufficient to convince the jury that the plaintiff's injury was in fact caused by her own allergy. One of the special findings of the jury was "(3) Was Mrs. Gephart's condition due to an allergic reaction to some of the solutions used in giving the permanent wave? Answer: Yes."

Res ipsa loquitur, said the court, is a rule of evidence which permits, but does not require, the jury to draw an inference of negligence in a case where the instrumentality causing injury is shown to have been within the exclusive management and control of the defendant and where the circumstances attending the injury were of such a character in themselves as to warrant the conclusion that a lack of ordinary care on the part of the defendant was responsible for the occurrence or condition causing the injury. The evidence here, concluded the court, does not disclose that circumstances attending the injury were of such a character as to warrant the only conclusion that a lack of ordinary care on the part of the defendant was responsible for the condition causing the plaintiff's injury. It could have been caused by either of two conditions: (1) the defendant's negligence or (2) the plaintiff's allergy.

The court refused to disturb the finding of the jury, and the judgment in favor of the defendant was affirmed. *Gephart v. Rike-Kumler Co.* 145 N. E. (2) 197 (Ohio, 1956)

MEDICAL FILM REVIEWS

Technique of Proctoscopy: 16 mm., color, sound, showing time 17 minutes. Prepared in 1956 by Raymond J. Jackman, M.D., Rochester, Minn. Procurable on loan from Photography Department, Mayo Clinic, Rochester, Minn.

In this film, the author states that about 70% of all the diseases that involve the entire five feet of large intestine can be diagnosed by proctoscopy and gives his reasons for using this procedure before turning to roentgenographic studies. The technique of passing the proctoscope is demonstrated on a sagittal section of the pelvis, as well as in endoscopic photographs on a live model. It is an excellent portrayal, step by step, from the taking of a proctologic history to the completion of the proctosigmoidoscopic examination. The narration is clear and concise, and the viewer receives an additional treat, in that he sees exactly what the examiner sees through the medium of endoscopic motion pictures in color. This film is highly recommended for students, house officers, and physicians who wish to become proficient in the technique of proctoscopy.

Management of the Neglected Third-Degree Burn with Demonstration of the Several Instruments for the Cutting of Skin Grafts: 16 mm., color, sound, showing time 27 minutes. Prepared in 1956 by Herbert Conway, M.D., New York. Procurable on loan from American Cyanamid Corporation, Danbury, Conn., or American College of Surgeons, 40 E. Erie St., Chicago 11.

The purpose of this film is to demonstrate the details of management of the chronic granulating wound and its preparation for the successful use of skin grafts. In addition, there is a demonstration of the use of several of the newer types of instruments for the cutting of skin grafts, as well as the procurement of skin grafts by hand-manipulated knives. Emphasis is placed on the postoperative dressing care and on the use of skeletal traction in the management of soft tissue wounds of the extremities in order to facilitate the frequent reapplication of dressings. The title of this film is somewhat misleading, since only a few minutes of the film are used to describe the management of the neglected third-degree burn. Most of the film concerns a demonstration of the use of various skin-grafting instruments. However, even for the plastic surgery resident, there is too quick a transition from one to the other without due demonstration. This film would be useful in teaching general surgery residents and first year plastic surgery residents. It would also be of interest to interns.

Care and Sterilization of Surgeons' Gloves: 16 mm., color, sound, showing time 13 minutes. Presented by the Wilson Rubber Company, Division of Becton, Dickinson and Company. Produced in 1957 by Mervin LaRue, Inc., Chicago. Procurable on loan from Becton, Dickinson and Company, Rutherford, N. J.

The methods demonstrated in this film are based on a national survey to determine the most effective, efficient, and economical method of washing and sterilizing surgeons' gloves and other latex products. A method of cleansing, drying, powdering, wrapping, autoclaving, culturing, and storing is portrayed for both large and small hospitals. The purpose of the film is to present methods which will protect gloves against adverse effects of repeated handling, washing, and sterilization. On the whole, the material and the manner in which it is presented is good. Alternate methods are mentioned, such as washing of gloves by hand or by machine. Interspersed throughout the film are the reasons for certain procedures. The photography is excellent. The film is recommended for showing to all who use surgeons' gloves and would be especially valuable for nurses and nurses aides.

Coccidioidomycosis: Its Epidemiologic and Clinical Aspects: 16 mm., color, sound, showing time 19 minutes. Technical Advisers: Roger Egeberg, M.D., Veterans Administration Center, Los Angeles, and Libero Ajello, Ph.D., Communicable Disease Center, Atlanta, Ga. Produced in 1956 by and procurable on loan from Communicable Disease Center, 50 Seventh St. N.E., Atlanta, Ga., and Veterans Administration, Central Office Film Library, Washington 25.

The purpose of this film is to acquaint trainees with the environment and natural conditions under which Coccidiodes immitis occurs. Although coccidioidomycosis is endemic to the southwestern part of the United States, the disease is often brought to other regions by travelers. Included in the film are the following subjects: (1) distribution and ecology of the etiological agent, Coccidiodes immitis; (2) clinical aspects of the benign and disseminated forms (shown through x-ray films, actual cases, and animation); (3) variations in the symptomatology; (4) histology; (5) serology; and (6) laboratory procedures for isolation and identification of the fungus. This worthwhile film mentions practically all phases of the disease, and several patients with skin and bone manifestations are shown. There is also a good description of the development of the organism itself and its appearance on culture and in tissue. The photography is good, and the film is highly recommended for general practitioners, residents, interns, and medical students.

Reconstitution of the Lung: 16 mm., color, sound, showing time 12 minutes. Prepared by the surgical staff of the Veterans Administration Hospital, Sun Mountain, N. Y. Produced in 1956 by and procurable on loan from Veterans Administration, Central Office Film Library, Washington 25.

The purpose of this film is to show representative segmental and bisegmental resection in right or left upper lobes and to discuss various operative situations and methods of reconstitution. Scenes showing each step and important structure in detail illustrate the manner in which the resulting defect is repaired or reconstituted. Operative situations and important complications of segmental resection which are seen to occur often are illustrated, and the methods of reconstitution are discussed. Also displayed is a technique for uniting the segments and closing the defect, which is an important point in the procedure of segmental pulmonary resection. The photography is satisfactory, and the film should be of particular interest to thoracic surgeons.

NEW FILM ADDED TO A. M. A. MOTION PICTURE LIBRARY

First a Physician: 16 mm., color, sound, showing time 27 minutes. Produced in 1956 by Audio Productions, New York, with the cooperation of the American College of Radiology. Presented by Photo Products Department, E. I. du Pont de Nemours and Co., Inc. Procurable on loan (service charge $1.00) from Motion Picture Library, American Medical Association, 535 N. Dearborn St., Chicago 10.

This nontechnical film is designed to portray the important role of the radiologist—a physician specializing in the use of x-ray, radium, and radioactive isotopes. Delineating a day in the life of a radiologist to show his training, activities, and importance, it authentically depicts facets of diagnostic and therapeutic radiology in the finding and treatment of various human ailments and diseases, including cancer. In addition to the radiologist, the following members of the medical team are shown: family physician, surgeon, intern, nurse, psychiatrist, x-ray technician, and anesthesiologist and his assistants. These locate and confirm, by angiography, a blood clot which is endangering the life of a boy. The photography is excellent. The film stresses the importance of teamwork in medicine. It is recommended for lay organizations, such as service clubs, and for student x-ray technicians, student nurses, and medical students.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Acquired Toxoplasmosis: Observations on Two Parasitologically Proved Cases Treated with Pyrimethamine and Triple Sulfonamides. D. E. Kayhoe, L. Jacobs, H. K. Beye and N. B. McCullough. New England J. Med. 257:1247-1254 (Dec. 26) 1957 [Boston].

The authors report on 2 patients with proved acquired toxoplasmosis, who were effectively treated with triple sulfonamides (equal amounts of sulfadiazine, sulfamerazine, and sulfamethazine). One patient, a 31-year-old research worker in a toxoplasmosis laboratory, became ill 6 days after he had scraped 1 finger of his hand with the needle while injecting laboratory mice with peritoneal exudate obtained from animals which were injected with RH strain of Toxoplasma gondii. The wound was superficial. Symptoms consisted of myalgia, headache, a rash, and fever. There was generalized lymphadenopathy, with lymphocytosis, atypical lymphocytes, and anemia. The serologic tests for toxoplasmosis became positive, and Toxoplasma organisms were recovered from the blood and later from an excised axillary lymph node. On the 15th day after the accident, specific chemotherapy was begun, consisting of oral administration of pyrimethamine and triple sulfonamides; 50 mg. of pyrimethamine was given as a loading dose, followed in 6 hours by 25 mg. and then by 25 mg. administered daily for 20 days; 1 mg. of triple sulfonamides was administered every 4 hours. The patient became afebrile within 36 hours, the lymphadenopathy and the skin rash subsided, and a marked subjective improvement was noted. The Toxoplasma dye test titer fell slightly during the treatment, and discharge took place after the completion of treatment. Seven weeks later the patient had a recurrence of the lymphadenopathy, with an increase in the dye test titer. A lymph node which was removed showed continuing disease, but Toxoplasma organisms were not isolated from this tissue. The patient became well without further treatment and has remained in good health for the past 18 months. The case of this patient illustrates the ease with which the infection can be acquired through a laboratory accident.

The second patient, a 48-year-old housewife, had a history of thyrotoxicosis, with the removal of a thyroid adenoma, and successful maintenance therapy with 60 mg. of desiccated thyroid administered daily for the next 5 months. Three weeks after the thyroid treatment was discontinued, peripheral neuropathy and then ocular complaints, followed by fever and lymphadenopathy, developed. The patient was treated daily for 5 days with intramuscular injections of penicillin without improvement: cervical, inguinal, and axillary lymphadenopathy then developed. The patient, whose blood count revealed 20,000 leukocytes per cubic millimeter, with 9% segmented cells, 2% basophils, and 89% lymphocytes, was suspected of having acute lymphatic leukemia. She was found to have a high Toxoplasma dye test titer. She had frequently eaten sandwiches made of raw ground beef and had eaten raw meat about two weeks before the onset of fever. Toxoplasma organisms were isolated from the lymph node and the gastrocnemius muscle tissue. Chorioretinitis developed, and the patient had persistent lymphocytes and increased protein in the spinal fluid. Treatment consisted of administering 50 mg. of pyrimethamine orally and daily for 2 days and then 25 mg. daily for the next 28 days. During the same period the patient received triple sulfonamides by mouth in a dosage of 0.5 mg. 4 times a day, increased after a brief period of intolerance to 1 mg. 4 times a day for a total of 30 days. There was a prompt and dramatic clinical response, with subsidence of the lymphadenopathy and healing of the ocular lesions. After the completion of 30 days' treatment, a repeat biopsy of lymph node specimen yielded Toxoplasma organisms on animal inoculation. The organisms were also isolated from a lymph node removed 66 days after treatment. The case of the second patient emphasizes the clinical similarities in leukemia, infectious mononucleosis, and acute toxoplasmosis. It also suggests a possible relation between toxoplasmosis and thyroid disease. This is the first parasitologically proved case reported, with chorioretinal lesions developing in the acute or subacute stage of the disease. The recovery of parasites from the patient's tissues after treatment suggests that the drugs may have a suppressive rather than a curative action. Skin tests for toxoplasmosis remained negative for more than 60 weeks after onset of symptoms in both patients.

The place of publication of the periodicals appears in brackets preceding each abstract.

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Oral Maintenance Treatment of Pernicious Anemia with Vitamin B_{12} and Swine Intrinsic Factor. P. Bastrup-Madsen. Nord. med. 58:1233-1239 (Aug. 22) 1957 (In Danish) [Stockholm].

In 25 patients with pernicious anemia, maintenance treatment with intrinsic factor from swine pyloric mucosa and vitamin B_{12} was applied. Since the effect of orally administered preparations can be capricious, patients with more marked neurological symptoms were given injection treatment. In most cases of pernicious anemia an initial complete hematological remission can be reached by oral treatment with intrinsic factor and vitamin B_{12}, and in some cases maintenance treatment will give complete hematological remission and normal B_{12} values in the serum for several years. Oral treatment, however, is not ideal as the standard treatment of pernicious anemia. In spite of good initial reaction, in not a few cases hematological relapse occurs after treatment for a time, and in other cases vitamin B_{12} values in the serum are low, even though the hematological remission is satisfactory. The author cautions against application of the oral treatment and says that it should be given only if the vitamin B_{12} concentration in the serum is used as the line of guidance for the treatment.

Leukemia Following Roentgen/Radium Therapy. A. Voll and J. Tveit. Nord. med. 58:1114-1117 (Aug. 1) 1957 (In Norwegian) [Stockholm].

Of 31 patients with definitely diagnosed leukemia admitted from 1950 to 1956, the 10 with acute leukemia or chronic myelogenous leukemia had had roentgenotherapy or radiotherapy for various disorders for a shorter or a longer period. None of the patients with chronic lymphatic leukemia had received such treatment. While the treatment was in most cases spread over a number of years, a summation effect cannot be ignored. Six of the 10 patients had been given relatively large total roentgen doses. Comparison with reports from other quarters seems to indicate a causal relation between acute and chronic myelogenous leukemia and irradiation for different diseases from one to several years before the onset of the leukemia symptoms.

Mouse Allergy: Case Report. A. H. Sorrell and J. Gottesman. Ann. Allergy 15:662-663 (Nov.-Dec.) 1957 [St. Paul].

A 22-year-old woman presented the following history. She had been doing research exclusively with mice for 2 years and for the last 6 months had been working only with Swiss mice (strains C57 and C58). Three months after she had started to work with these mice she had nasal stuffiness and sneezing whenever she worked in the mouse room. These symptoms were present only in this room or in its immediate vicinity; elsewhere, in or out of the hospital, she was free of all nasal complaints. A scratch by a mouse would produce a wheal accompanied by erythema and pruritus. Specific allergy to mouse dander was proved by positive direct and indirect skin tests. Hyposensitization therapy with an autogenous extract was instituted. This produced considerable improvement.

SURGERY

Mucoid Impaction of the Bronchi: A Study of 36 Cases. R. R. Shaw, D. L. Paulson and J. L. Kee Jr. Am. Rev. Tuberc. 76:970-982 (Dec.) 1957 [New York].

The authors report on 20 male and 16 female patients, between 14 and 60 years of age, with mucoid impactions of the bronchi, which were located in the segments of the upper lobes in 24 patients, in the lower lobes in 5, and in the lingula or middle lobes in 3. Four patients had multiple regions of involvement. Thirty of the 36 patients had a history of asthma or chronic obstructive bronchitis, 26 had cough and expectoration of purulent sputum, 17 had a localized pleuritic type of pain, 16 remembered having coughed up hard rubbery plugs of mucus, 14 had fever, 13 had frequent upper respiratory infections, and 11 had episodes of hemoptysis; weight loss associated with severe pulmonary infection occurred in 5. Twenty-two patients were operated on, and 14 were treated by medical measures. In general, medical management was advised for the patients with [illegible] impactions, and surgical removal for those having localized disease. Segmental resection was performed in 6 patients, and lobectomy in 16. Roentgenologic examination of the chest proved to be the most valuable single measure for diagnosing and evaluating the course of the condition. The main diagnostic value of bronchoscopy was in excluding the presence of a neoplasm in patients over 40 years of age. Bronchography may reveal not only the obstruction of the bronchi but also the cystic bronchiectasis in other segments which remains as the residuum of previous episodes of mucoid impaction.

Of the 22 patients operated on, 1, a 15-year-old boy with bilateral cystic bronchiectasis, died 8 hours after an attempted segmental resection, in the course of which cardiac arrest had occurred. The death of 1 patient, 7 years after the surgical intervention, resulted from progressive pulmonary infection. Three patients were asymptomatic before the surgical intervention. Sixteen of the remaining 17 patients were definitely improved after the surgical intervention. Twelve of the 14 patients treated medically were unimproved. Pathological examination of the operative specimens revealed that suppuration occurred beyond the blocked bronchi and that the bronchial wall underwent destruction.

Mucoid impaction of the bronchi should be considered in the differential diagnosis of any patient who has a history of asthma and complains of recurrent respiratory infections associated with hemoptysis and pain.

Synthetic Materials as Vascular Prostheses: I. A Comparative Study in Small Vessels of Nylon, Dacron, Orlon, Ivalon Sponge and Teflon. J. H. Harrison. Am. J. Surg. 95:3-15 (Jan.) 1958 [New York].

Grafts of nylon, polyethylene glycol terephthalate (Dacron), polyacrylonitrile (Orlon), formalized polyvinyl alcohol sponge formulation (Ivalon sponge), and polytetrafluoroethylene (Teflon), with a wide range of chemical and physical properties, were inserted into the abdominal aorta and the carotid and femoral arteries of 133 dogs. Frozen, dried homografts were inserted into the abdominal aorta of 10 dogs as controls. The best and only satisfactory results were obtained with woven, purified Teflon tubes; *the 6.3% rate of occlusion* associated with this synthetic material compared favorably with 10% occlusion rate associated with homografts. Nylon grafts were accompanied by a high rate of thrombosis, and the thickness of the fibrous enclosure eliminated much of the advantage of nonbuckling in the crimped tubes. Dacron was considered better than nylon, but the thickness of the fibrin lining and the high rate of occlusion made it unsatisfactory for replacing small vessels. Knitted tubes of Orlon were too porous and were complicated by excessive delayed bleeding, with hematomas around the graft. Molded grafts of Ivalon sponge were unsatisfactory because of breakdown, with aneurysm and/or rupture.

Grafts with a longitudinal seam are inferior to prewoven or molded tubes. The latter will have less wrinkles and can be inserted with smoother anastomotic lines. Synthetic grafts must be inserted under slight tension, as loose insertion will allow buckling with a high rate of occlusion. Solid tubes will not remain patent in small vessels, and grafts with an air porosity of over 50 are too porous. Between these extremes the rate of healing is dependent as much on the reaction incited by the synthetic material as on the porosity of the graft. None of the synthetic prostheses studied proved satisfactory for replacing blood vessels less than 5 mm. in diameter.

Synthetic Materials as Vascular Prostheses: II. A Comparative Study of Nylon, Dacron, Orlon, Ivalon Sponge, and Teflon in Large Blood Vessels with Tensile Strength Studies. J. H. Harrison. Am. J. Surg. 95:16-24 (Jan.) 1958 [New York].

Grafts of nylon, Dacron, Orlon, Ivalon sponge, and Teflon were inserted into defects of the thoracic aorta of 84 dogs. Tensile strength determinations were made on the synthetic materials making up the grafts for periods of up to 2 years with the Instron apparatus, a highly sensitive electronic weighing system employing bonded wire strain gauges for detecting and recording the tensile load applied to the sample under test. A stress strain curve was plotted. Maintenance of patency was no problem, as only 1 graft became occluded and this was secondary to a hematoma. Nylon underwent rapid degeneration after implantation in the body. This was complete in 1 graft, resulting in a dissecting aneurysm that ruptured through its fibrous enclosure and a bronchus. Nylon is considered unsatisfactory as a vascular prosthesis. Ivalon sponge proved to be unsatisfactory because of rapid breakdown, with aneurysm and rupture of the grafts. Orlon, Dacron, and Teflon maintained their strength during the period of observation. Teflon is considered the material of choice, as it is chemically more inert and would be expected to lose less strength after longer periods of time. Further follow-up studies are in progress.

A Critical Review of One Hundred and Sixty Consecutive Scalene Node Biopsies. S. M. Scott. Am. Rev. Tuberc. 76:1002-1006 (Dec.) 1957 [New York].

Scalene lymph node biopsies were performed on specimens from 160 patients, 64 of whom had carcinoma of the lung, 15 had Boeck's sarcoid, 28 had tuberculosis, 3 had tuberculosis associated with silicosis, 7 had silicosis, 3 had carcinoma of the esophagus, 2 had lymphoma, 3 had histoplasmosis, and 35 had various other conditions. A positive histological diagnosis was made with the aid of the scalene lymph node biopsy in 33 (20.6%) of the 160 patients. Those with primary carcinoma of the lung comprised the largest individual group for whom scalene lymph node biopsy was performed. The scalene lymph nodes of 10 (15.6%) of the 64 patients with carcinoma of the lung were positive for neoplastic disease. Bronchoscopy and sputum examinations failed to reveal histological or cytological evidence of carcinoma in the 10 patients. Bronchoscopic biopsy led to the finding of carcinoma in 22 patients (34.4%). The carcinoma lesion was operable in 40 of the 54 patients with normal scalene lymph nodes; in 21 of these (39%), the lesion was resected. One patient with carcinomatous disease in the scalene lymph node was operated on, but the lesion was not resected.

The scalene lymph node biophy is a valuable diagnostic adjunct. Positive results will be more easily obtained in cases of hilar adenopathy or diffuse bilateral pulmonary infiltration. The roentgenographic appearance, however, should not limit the use of the procedure in patients with undiagnosed pulmonary or mediastinal lesions. A scalene lymph node biopsy supplements other established diagnostic routines. A positive finding of carcinoma by biopsy is a contraindication to exploration for carcinoma of the lung. The value of the procedure is directly proportional to the skill of the operator. If no lymph nodes are obtained, the biopsy is inadequate. Positive findings in biopsy specimens must be interpreted along with the clinical findings. Granulomatous lesions are not always sufficiently specific to resolve a doubtful diagnosis.

Ligation of the Inferior Vena Cava in Cardiac Decompensation. E. G. Burmenko. Sovet. med. 21:104-108 (No. 10) 1957 (In Russian) [Moscow].

The author reports on 76 patients subjected to ligation of the inferior vena cava. The age of the patients was from 19 years to 48 years. The duration of illness varied between 3 and 12 years. Thirty-nine patients had predominantly stenosis of the mitral valve. Thirty patients showed predominant insufficiency of the mitral valve. In 7 patients the 2 lesions were present in the same degree. The majority of the patients had both involvement of the mitral valve and insufficiency of the tricuspid valve. Twenty-four patients who were operated on had ascites, anasarca, and extensive peripheral edema. Two patients were threatened with pulmonary edema. The remaining 50 patients exhibited manifestations of stasis in the greater and lesser circulations but with moderate ascites and edema. All the patients were referred by internists after a prolonged but ineffective conservative treatment. In the preoperative period the patients were treated with cardiotonics, intravenously administered dextrose, diuretics, and vitamins. In the immediate postoperative period the mortality amounted to 16.8%. Twelve per cent of the patients showed no improvement, but there was relative improvement in 22.2% and considerable improvement in 49.2%. Analysis of these results suggests that ligation of the inferior vena cava does not necessarily prevent pulmonary edema.

Postmortem studies demonstrated a pronounced stenosis of the mitral valve, while in 30 of the 76 patients operated on there was predominant insufficiency of the mitral valve. The late postoperative results were as follows: 9 patients died 4 months to 1½ years later, and 7 patients died because of progressive circulatory failure after 4 months, 8 months, and 1½ years. Those who died showed in the preoperative period ascites, anasarca, hydrothorax, and extensive peripheral edema. Improvement was noted in 14 patients. Satisfactory results were observed in patients with manifestation of stasis in the lesser and minor circulation but without pronounced ascites and edema. The author concludes that ligation of the inferior vena cava is indicated (1) in stenosis of the mitral valve with circulatory failure in the absence of effective conservative treatment, (2) in stenosis of the mitral valve with repeated episodes of decompensation, and (3) in stenosis of the mitral valve without pronounced changes in circulation, when attempt at activity leads to rapid recurrence of decompensation. The operation is indicated more in patients who will later be subjected to commissurotomy. The operation is contraindicated (1) in the presence of definite changes in the myocardium with long-existing fibrillation resistant to medical treatment (2) in active rheumatic carditis, and (3) in sclerosis of the liver. The author feels that ligation of the inferior vena cava is a palliative operation and that after a shorter or a longer period of time the patients will again develop disturbances of cardiovascular activity. The operation is justified when all other therapeutic measures have failed.

Combined Antibiotics in the Surgical Treatment o Chronic Pulmonary Suppuration. V. I. Struchkov and A. M. Marshak. Sovet. med. 21:26-31 (No. 9 1957 (In Russian) [Moscow].

The authors report on 315 patients treated fo chronic pulmonary suppurative disease. Two hundred twenty-three of these were subjected to surgical intervention. Pneumonectomy was done in 79 bilobectomy or lobectomy in 123, while 21 wer treated by ligation of pulmonary vessels, partia thoracoplasty, and the like. The majority of the patients were admitted to the clinic in the acute stag of infection, with high temperature and profus expectoration. The authors stress the importance o combined antibiotics in the preoperative treatmen of these patients. Combination of antibiotics is indicated in order to obviate the development of dru tolerance in the patient, as well as the emergence o resistant strains of microbes. In some of the patients, combination of penicillin with streptomycin proved ineffective, particularly in those who had been previously treated with these antibiotics fo long periods of time.

Of the recently developed combinations, biomycin with Novocain and Terramycin with Novocain given intramuscularly proved particularly effective The study of the absorption of these combination in 30 patients showed a high concentration of them in the lungs of the patient. Penicillin and streptomycin were employed in the preoperative treatment in the form of an aerosol. Sulfanilamide preparations were also employed, together with antibiotics. Silk sutures used in the closure of the bronchial stump and in ligation of the large vessels were impregnated with penicillin. Treatment with antibiotics is continued for from 10 to 12 days in the postoperative period. As prophylaxis, combinations of penicillin with streptomycin and sulfadimensin are given. Tetracycline is administered if signs of infection appear. The combined treatment given to 75 patients made it possible to stage the operation in the phase of remission, while the earlier employment of streptomycin and penicillin alone resulted in the necessity of subjecting 5% of the patients to operation during the stage of exacerbation of the infectious process.

Adrenalectomy in Treatment of Advanced Cancer. M. Dargent, M. Mayer and P. Blondet. Semaine hôp. Paris 33:4253-4266 (Dec. 20) 1957 (In French) [Paris].

The authors report on 44 patients, 39 women and 5 men, with advanced cancer, who underwent adrenalectomy. Thirty-eight of the 44 patients had cancer of the breast, 4 had cancer of the prostate, 1 had cancer of the testis, and 1 had diffuse cancer of the uterine cervix. Five patients had unilateral adrenalectomies, and 39 had bilateral adrenalectomies. Thirty-eight of the 39 bilateral adrenalectomies were performed in 2 stages, and 37 were performed first on the right side. Right-sided adrenalectomy was combined with castration in 16 of the 39 patients with bilateral adrenalectomy. Thirty-one of the 44 patients were followed up for more than 6 months to 2½ years postoperatively.

There were 3 postoperative deaths resulting within a few hours to 4 days; those were from acute adrenal insufficiency in 1 patient, from respiratory paralysis in 1 patient with multiple and particularly cerebral metastases of carcinoma of the prostate, and from asphyxia in 1 patient with cancer of the breast associated with diffuse carcinosis of the pleura, asthma, and cardiac failure. Good subjective results, consisting of relief of pain, recovery of sleep, and euphoria, were obtained in 16 of the 31 patients, and excellent results were obtained in 6 in whom these improvements were maintained for at least 6 months. The remaining 6 patients did not obtain any subjective improvement. Objective results were much less satisfactory; 12 of the 31 patients did not obtain any objective improvement, 10 obtained good results in that the spread of the cancerous process in the soft tissues or the osteolysis from bone metastasis receded for from 2 to 6 months, and 6 obtained excellent results with disappearance of visceral, pulmonary, bone, and lymph node lesions for at least 6 months. An increased amount of follicle-stimulating hormone was determined in these 6 patients, 1 of whom had cancer of the prostate and 5 had cancer of the breast. The anatomicopathological study of the removed adrenal glands revealed metastases in 13 of the 44 patients; all 13 patients had cancer of the breast.

These data show that excellent subjective and objective results, particularly concerning the bone lesions or the soft tissue lesions, may be expected in 1 out of 5 or 6 patients. An increase in the amount of follicle-stimulating hormone after the adrenalectomy may generally be considered as a favorable prognostic sign. Adrenalectomy is indicated in patients with advanced cancer of the breast and the prostate, and particularly in patients of the first group in whom ovariectomy should be performed as a first-stage procedure; bilateral adrenalectomy in 1 stage should be taken into consideration after ovariectomy if the latter provides definite relief of pain and of acute peritumoral phenomena in the soft tissues, suggesting an estrogenic dependence of the lesions. Cardiorenal insufficiency and severe respiratory insufficiency are formal contraindications to adrenalectomy. Diffuse bone metastases, pleuropulmonary metastases without considerable respiratory insufficiency, and choroidal metastases are excellent indications to adrenalectomy.

The major inconvenience associated with bilateral adrenalectomy is that the patients must be subjected permanently to steroid substitution therapy. In an attempt to make this therapy dispensable, the left adrenal was implanted into the spleen after ovariectomy, and right-sided adrenalectomy was performed on 2 women with advanced cancer of the breast; these patients were followed postoperatively for more than 3 months. Early results seemed to be highly encouraging.

Ligation of Ankle Communicating Veins in the Treatment of the Venous-Ulcer Syndrome of the Leg. H. Dodd, A. R. Calo, M. Mistry and A. Rushford. Lancet 2:1249-1252 (Dec. 21) 1957 [London].

The authors began ligating ankle communicating veins in patients with venous-ulcer syndrome of the leg in 1953, when it was described by Cockett and Elgan Jones. They performed extrafascial ligation of 2 or 3 communicating veins passing through the deep fascia behind the lower third of the tibia. Later, they adopted the radical subfascial ligation of the communicating veins of the lower leg. They diagnose incompetence of the ankle communicating veins from the history, examination of the limb, tourniquet tests, and occasionally by venography. There is often a history of deep thrombosis in one or both legs, associated with an accident, fracture, illness, operation, or pregnancy. The authors rarely operate in the presence of an ulcer or of eczema. These are healed first by ambulatory pressure bandaging. The incision runs ¾ in. behind and parallel to the posterior border of the tibia for 10 in., finishing behind the internal malleolus. It is deepened through the deep fascia, which may be thick and dense. There are 3 phases of the operation: division of the medial, calf, lateral, and other perforating veins; closure of the skin; and application of the pressure bandage.

Ligation of incompetent ankle communicating veins has been carried out in 174 patients, of whom 110 had had a previous operation for varicose veins, but the ulcer syndrome had returned. There were 129 women and 45 men. Thirty-seven of the patients had bilateral vein ligations, that is, a total of 211 limbs were operated on. No patient died or developed deep thrombosis, embolism, or acute sepsis. Good results were obtained in 135 and fair results in 21 of the 174 patients. In 12 patients the results were unsatisfactory, and 6 patients could not be traced. Of 96 patients seen 2 or more years after their operation, 86 showed a good or a fair result, and only 6 an unsatisfactory one. The authors realize that a significant follow-up should extend for at least 5 years, but the present survey seems encouraging.

Contribution to the Study of the Problem of Regenerated Function of the Sympathetic Nervous System Which Was Suppressed by Surgery: Electrical Skin Resistance Before and After Lumbar and Thoracic Ganglionectomy. W. Montorsi, C. Ghiringhelli, G. Tiberio and F. Lavorato. Minerva cardioangiol. 5:354-370 (Sept.) 1957 (In Italian) [Turin, Italy].

Electrical skin resistance has become important to surgeons dealing with the sympathetic nervous system in order to establish the extent of the denervated area after sympathectomy and its possible regeneration. Studies of electrical skin resistance for a period of 3 years were done on 70 patients, of whom 55 were subjected to lumbar ganglionectomy for chronic obliterating arteriopathy and 15 were subjected to thoracic ganglionectomy for Raynaud's disease. The tests were carried out before, a few weeks after, and 3 years after the operation. Patterns of electrical skin resistance obtained before the operation showed gradual decrease in values when proceeding from the proximal (between 1.5 and 3 million ohms) toward the distal parts of the extremities (between 50,000 and 200,000 ohms). Values of electrical skin resistance tests of the distal part of the extremities on the same side of the area operated on increased considerably 3 to 5 weeks after operation (several million ohms). Skin resistance values recorded 3 years after the operation decreased in comparison with those observed a few weeks after the operation, although in most patients they were higher than those observed before the operation.

Patterns of electrical skin resistance thus revealed a gradual and moderate regeneration of the sympathetic nervous system after lumbar or thoracic ganglionectomy. A marked regeneration of the sympathetic nervous system was observed only in a few patients 3 years after the operation. The opinion of the authors is that regeneration is brought about either through fibers which innervate the adjacent areas or through fibers in the spinal nerves which have no connection with the lateral vertebral ganglions.

GYNECOLOGY & OBSTETRICS

The Special Problem of Rheumatic Heart Disease in Pregnant Women. C. S. Burwell. A. M. A. Arch. Int. Med. 101:60-66 (Jan.) 1958 [Chicago].

Observations were made during a 6-year period on 277 pregnant women with heart disease. Rheumatic heart disease accounted for 85% of the heart lesions in this group, while almost all the other lesions were of congenital origin. Mitral stenosis presents the major problem in about two-thirds of pregnant women with heart disease. The pregnant woman with mitral stenosis has a higher left atrial pressure. The elevated left atrial pressure is due to an elevated ventilation volume. There are three varieties of approach to the management: 1. The problem may be avoided by terminating the pregnancy. This is not a good solution, however, because the fetal mortality is 100%, there is some risk to the mother, and psychologically the effects are generally bad. 2. To modify the mitral stenosis by surgery during pregnancy is not a good solution, partly because it is almost never necessary and partly because of certain special risks of cardiac surgery in a pregnant woman. 3. Conservative medical management is the possibility which is the most sensible and most successful.

There were 3 maternal deaths in 298 pregnant women with rheumatic heart disease. One patient with aortic stenosis died suddenly after the interruption of pregnancy, 1 patient with a twin pregnancy died some weeks after mitral valve surgery (which had not been advised by the author), and 1 patient with aortic disease died of micrococcic (staphylococcic) pneumonia. On the basis of this experience the author concludes that in terms of immediate maternal mortality the results of conservative management are good. In the vast majority of instances it is possible to carry women with heart disease safely through pregnancy. Success depends on the understanding and careful application of the principle of the total cardiac burden in pregnancy and of other aspects of the patient's life which influence this burden. The success with which the principle can be applied depends on the cooperation of the patient, the persuasiveness of the physician, and the availability of appropriate services in the community.

Endometrial Adenocarcinoma Eleven Years After Pelvic Radiation for Cervical Epidermoid Carcinoma. W. G. Pace and L. Barnes. Am. J. Obst. & Gynec. 75:175-179 (Jan.) 1958 [St. Louis].

The case reported is of particular interest not only because it presents the appearance of endometrial adenocarcinoma 11 years after successful therapy with radium for carcinoma of the cervix but also because it demonstrates the appearance and progression of adenomatous cystic hyperplasia of the endometrium despite massive doses of pelvic radiation. Epithelioma of the cervix had been demonstrated in 1944. At that time therapy consisted of the administration of 3,600 mg.-hr. of radium by tandem applicator (50 mg. for 72 hours). Several months later, for completion of therapy, intravaginally administered x-ray treatment with 4,800 r (800 r 6 times) was carried out. The patient was followed in the outpatient department of the hospital at intervals and apparently remained well about 29 months. At that time the patient again noted vaginal spotting. Cervicitis and adenomatous cystic hyperplasia of the endometrium were demonstrated. The patient was treated with external pelvic radiation of 3,600 r by alternating 300 r to the anterior and the posterior pelvis for 12 treatments. Four months later she was given 168 hours of radium with 2 no. 4, 1 no. 3, and 9 no. 2 needles. It is impossible to determine the exact dosage that this represented in milligram-hours of radium.

The appearance of the second primary tumor of the uterus 11 years after treatment of the original neoplasm prompts speculation on its origin. The higher incidence of carcinoma of the endometrium appearing years after the application of small doses of radiation to the pelvis is well recognized, but it is unlikely that the massive amount of radiation given in this case would act to stimulate the one remaining ovary to the production of excessive amounts of estrogens, this being the hypothesis usually advanced in explanation of the carcinogenic activity of smaller doses of radiation. Although there is apparently no common causal relationship between carcinoma of the cervix and endometrial hyperplasia, it is of further interest that these 2 conditions were demonstrated to be coexistent at the time of recurrence of cervical carcinoma. In spite of the high dose of local radiation at that time, the progression from adenomatous hyperplasia to carcinoma was not arrested. Radiation as a treatment for a adenomatous hyperplasia of the endometrium should be discouraged.

Evaluation of a Systemic Treatment of Trichomonas Vaginalis. A. Bocci. Minerva ginec. 9:727-731 (Sept. 15) 1957 (In Italian) [Turin, Italy].

Failure to effect permanent cure of infection with Trichomonas vaginalis may be the result of the protozoan being harbored in inaccessible sites, such as glands and urogenital tracts. An infected mate may reinfect his or her coital partner. The author presents his experience with 203 couples, of whom at least 1 partner had the infection of Trichomonas vaginalis. All men in the group were examined for infection of Trichomonas vaginalis. The patients received 2 courses of treatment, 1 of which was a 3-week premenstrual and the other was a 1-week postmenstrual course. Observed couples were divided into 6 groups, each 2 being subjected to a different regimen of treatment. Local vaginal treatment was given to 50 women, local vaginal and local urethral to 25 women, local urethral to 20 couples and local vaginal to the female partners. Oral treatment was given to 25 couples, oral to 47 couples and local vaginal to the female partners, oral and urethral to 36 couples and local vaginal to the female partners.

Local vaginal and urethral treatments included antiseptic substances with trichomonacidal properties and antibiotics. Subsequently, estrogenic hormones and biological products designed to reestablish the normal vaginal flora were given. Oral treatment included a daily dose of 60,000 units of an Italian proprietary trichomonacidal preparation (Trichomicina) and a daily dose of 300 mg. of Tritheon (2-acetyl-amino-5-nitrothiazole). Oral treatment alone produced the poorest results (6 cures—24%). Better results were obtained with local vaginal treatment alone (18 cures—36%) or in combination with local urethral treatment (9 cures—45%). Combination of oral and local vaginal and urethral medications gave the best results (25 cures—70%). The author concludes that, in view of the ability of the protozoa to survive outside the host's body, a simultaneous oral and local treatment of both coital partners is recommended.

PEDIATRICS

Concerning the Choice of Therapy for Childhood Hyperthyroidism. M. B. Arnold, N. B. Talbot and O. Cope. Pediatrics 21:47-53 (Jan.) 1958 [Springfield, Ill.].

The authors report on 34 children with thyrotoxicosis, between less than 5 years and 15 years of age, who were similar concerning age of onset of symptoms and average duration of follow-up. Eighteen of these were subjected to subtotal thyroidectomy and were given thyroid substitution therapy with standard doses for 1 year. Nine of the 18 patients were found to be euthyroid and the other 9 to be hypothyroid at the close of this testing period. No treatment was given thereafter to the euthyroid patients. Thyroid, USP, in standard substitution doses was prescribed on a permanent basis for the hypothyroid patients. None of the patients suffered from paralysis of the recurrent laryngeal nerve or other significant operative complications, and none had a recurrence of the thyrotoxicosis. The 16 patients treated medically were given propylthiouracil for an average of 31 months. Eight of these had apparently permanent remissions after 16 to 57 months of treatment with propylthiouracil, and 4 were still in need of therapy after 12, 16, 48, and 87 months of treatment respectively. Two of the remaining 4 were subjected to total thyroidectomy because of drug toxicity and 2 because of failure to follow directions. Six of the entire group had persistent goiter.

These data indicate that both methods of treatment are equally capable of eliminating the overt clinical manifestations of toxic diffuse goiter (Graves' disease) and that they yield about equal numbers of "cured" patients at the end of a 2-year period. Provided due care is taken, the risk of serious complications due to these forms of treatment also can be kept low. The surgical and medical regimens, however, appear to differ considerably in terms of their impact on the life of the patient and his family. The surgical method involves a brief preoperative period of detailed medical supervision, culminating in hospitalization for surgery with its slight but definite mortality risk. Thereafter, apart from possible need to take a dose of thyroid daily, the patient may be considered essentially normal. By contrast, the medical method requires that a medicament be administered to the patient about every 8 hours for a minimum of 2 years. One of these doses may of necessity have to be taken in the middle of the night at an hour when children are normally allowed to sleep undisturbed. Medical therapy also requires that the patient remain accessible to his physician for regulation of dosage and for prompt recognition of drug toxicity, which should be suspected every time the child has a sore throat or fever. These requirements of medical treatment may in themselves constitute a significant handicap to the child and his parents. This has to be taken into account in selecting the type of therapy to be recommended to each individual patient. It seems, however, that the acute stress of a carefully performed operation is less likely to injure the child as an individual than the prolonged incumbrances of chemotherapy.

Determination of Some Streptococcal Antibody Titers and Acute Phase Reactants in Patients with Chorea. T. N. Harris, S. Friedman and D. C. McLean. Pediatrics 21:13-21 (Jan.) 1958 [Springfield, Ill.].

Forty-three patients with chorea were subjected to 5 laboratory tests at the rheumatic fever research laboratory of the Children's Hospital of Philadelphia. Two of these tests were streptococcic serologic tests consisting of determinations of the antihemolysin-O (antistreptolysin) and antihyaluridase titers in the patients' serums, and the 3 other tests were short-term tests consisting of determinations of the erythrocyte sedimentation rate and of the concentrations of C-reactive protein and of mucoproteins in the patients' serums. Twenty-three of the 43 patients showed other major manifestations of rheumatic fever during the episode of chorea and could, therefore, be considered as rheumatics. None of the other major rheumatic manifestations of rheumatic fever had ever been observed in the remaining 20 patients who apparently had "pure" chorea.

The values of the 3 short-term tests were within normal limits in all or almost all the patients in whom chorea was not accompanied by other manifestations of rheumatic fever, whereas among those with such manifestations most of the values of the short-term tests were positive or above normal limits. The frequency distribution of titers of the 2 streptococcic antibodies observed in the serums of patients with rheumatic chorea was different from that observed in those of patients with "pure" chorea, the former having a higher center and range of distribution. The results of both the short-term tests and the streptococcic serologic tests also gave evidence of contamination of the "pure" chorea group with rheumatic patients. The data obtained in this study suggest, in agreement with those of several other observers, that the symptom complex of chorea can exist apart from the disease of rheumatic fever. The differential diagnosis between "pure" chorea and chorea which occurs as a manifestation of rheumatic fever is a matter of clinical judgment, and the laboratory aid toward the differential diagnosis may be applied in the same way as in other differential diagnoses involving rheumatic fever.

Hypertension and Hypercalcemic Nephropathy Due to Vitamin D Intoxication: A Case Report. W. G. Way, D. L. Morgan and L. E. Sutton Jr. Pediatrics 21:59-69 (Jan.) 1958 [Springfield, Ill.].

The authors report a case of hypercalcemic nephropathy associated with hypertensive encephalopathy, secondary to vitamin D intoxication, in a 26-month-old girl. Before admission to the department of pediatrics of the Hospital of the Medical College of Virginia, the child was treated in another hospital for vitamin D-resistant rickets. Treatment had consisted of 170,000 I. U. of calciferol administered daily for 3 months. She had been immobilized in a spica cast, and her diet included about 1 qt. of milk daily. Anorexia, vomiting, polydipsia, flushing of the face, and progressive lethargy had been present for 11 days, and coma for 30 minutes before admission to the Medical College Hospital. Blood pressures were 160/120 mm. Hg in the upper extremities and 200/150 mm. Hg in the lower extremities. Left-sided clonic convulsions began, and the rectal temperature rose to 104 F (40 C). The seizures were controlled by phenobarbital sodium and open-drop ether. Acetylsalicylic acid, continuous sedation, parenterally administered fluids, and antibiotics were also given. By the second hospital day the temperature had returned to normal, but there was sustained severe hypertension. For the first 6 days an attempt was made to control the hypertension with intramusular and intravenous injections of magnesium sulfate. No side-effects were noted, but the drug soon lost its effectiveness. From the 7th to the 11th day the patient received cryptenamine (Unitensen) intravenously and intramuscularly, which was effective but had to be withdrawn because of uncontrollable vomiting. During the period from the 11th to the 14th day, in the course of which control of the blood pressure was achieved, the patient was given reserpine (Serpasil) and pentolinium (Ansolysen). During the period from the 15th to the 58th hospital day, in the course of which the blood pressure was gradually restored to normal, the hypotensive agents were withdrawn. Severe renal impairment was present on admission and regressed as the patient improved. The patient was followed at monthly intervals. Improvement was gradual, but she continued to be retarded mentally and physically. The blood pressure remained in the normotensive range.

The mechanism of vitamin D intoxication is not entirely clear. Hypercalcemia of vitamin D intoxication is considered to be the result of increased calcium absorption and decreased urinary and fecal excretion. Immobilization reduces osteoblastic activity, thus increasing resorption of bone, contributing further to elevation of the concentration of calcium in the serum. As a result of renal damage, there is a decreased glomerular filtration rate with further retention of nitrogen and phosphorus. Increased resorption of bone contributes also to hyperphosphatemia, although this is primarily due to decreased urinary excretion of phosphorus. The resultant hypercalcemia and hyperphosphatemia are conducive to metastatic calcification in and around the renal tubules. Measures to lower the concentration of calcium in the serum should be instituted. These include elimination of vitamin D and calcium from the diet. Little can be done to improve the renal insufficiency except to maintain adequate hydration and electrolyte balance. The combination of rauwolfia and pentolinium proved to be effective in this patient for controlling the hypertension. Prevention of vitamin D intoxication and its attendant complications, such as renal insufficiency, azotemia, and hypertension, rests with the judicious use of preparations containing vitamin D. If unusually large amounts are administered, the attending physician should be aware of the serious sequelae that may follow. Studies of renal function should be done at the onset of therapy, and these, along with determinations of calcium, phosphorus, and urea nitrogen in the blood, should be made at frequent intervals. Blood pressure and urinary excretion of calcium should be measured weekly.

Response of the Young Infant to Poliomyelitis Vaccine Given Separately and Combined with Other Antigens. R. Batson, A. Christie, B. Mazur and J. H. Barrick. Pediatrics 21:1-7 (Jan.) 1958 [Springfield, Ill.].

Two groups of infants, each consisting of 50 babies, received poliomyelitis immunization courses. The infants in the first group received 1 cc. of poliomyelitis vaccine at the ages of 6 weeks, 12 weeks, and 10 months or 3 injections at intervals of 6 weeks and 7 months. The infants in the second group were given poliomyelitis vaccine according to the same schedule as those in group 1, with the only exception that the first dose of the poliomyelitis vaccine was administered in the same syringe with pertussis and smallpox vaccines, and the second and third doses of poliomyelitis vaccine were given in the same syringe with diphtheria-pertussis-tetanus toxoid. The right lower extremity was used for the intramuscular injection of poliomyelitis vaccine. Blood was collected at the time of each injection of poliomyelitis vaccine and also 2 weeks and 4 or more months after the third or "booster" injection; thus, each infant had 5 collections of blood for antibody determinations uniformly obtained from the internal jugular vein.

Poliomyelitis vaccine administered to 6-week-old infants resulted in a satisfactory antibody response. The response to poliomyelitis vaccine mixed with pertussis and diphtheria-pertussis-tetanus toxoid and given as 1 injection was satisfactory. The combination of antigens gave no practical interference with the development of antibodies to diphtheria and pertussis. There were no apparent hazards or adverse reactions associated with combined poliomyelitis-pertussis or poliomyelitis-diphtheria-pertusis-tetanus vaccines. There were no differences in poliomyelitis antibody response after immunizations with separate and combined vaccine injections. The existence of maternal antibodies at the time of poliomyelitis immunization had no apparent influence on the production or persistence of active antibodies. These findings indicate that poliomyelitis immunization procedures can easily be integrated into routine pediatric immunization programs, thereby affording the earliest possible protection.

THERAPEUTICS

An Appraisal of the Present Treatment of Barbiturate Poisoning. L. C. Jenkins and H. B. Graves. Canad. Anaesthet. Soc. J. 5:41-54 (Jan.) 1958 [Toronto, Canada].

Moderately severe poisoning usually occurs when 5 to 10 times the full oral hypnotic dose of barbiturate has been ingested. The fatal dose varies with many factors and cannot be stated with certainty, but when over 15 to 20 times the ordinary hypnotic dose has been absorbed, severe poisoning will ensue and even expert therapy may fail to save the patient's life. The major action of the barbiturates is depression of the central nervous system. The untoward effects on the cardiovascular system observed in acute barbiturate poisoning are to some extent secondary to hypoxia due to respiratory depression. Experimentally, very large doses have been shown to produce cardiac irregularities and even cardiac failure in heart-lung preparations. The medullary respiratory center is depressed directly, and breathing becomes slow and shallow. This is the major danger in acute barbiturate intoxication.

There is a general tendency to overtreat the patient poisoned by central nervous system depressants. In cases of mild to moderate intoxication, little therapy other than supportive measures may be required. The present-day controversy centers on the use of central analeptics of which picrotoxin and metrazol are most commonly employed either separately or conjointly. Their use is not without dangers. They are not always effective in severe barbiturate poisoning. The consensus is that sodium succinate is not useful in acute barbiturate poisoning. Recently, nonconvulsive electrostimulation has been advocated, but it has yet to be confirmed in patients as being beneficial in acute barbiturate poisoning. Two major recent advances in the treatment of acute barbiturate poisoning are as follows: 1. The use of bemegride (Megimide) and amiphenazole hydrochloride, 2-4-diamino-5-phenylthiazole (Daptazole), as chemical antidotes. Initially, they were believed to be true chemical antagonists to barbiturates on the basis of their structural similarity. It now appears that they are central analeptics but with a high specificity for the barbiturates. They are not ideal, since toxicity occurs with overdosage. 2. Hemodialysis. This has shown encouraging results in the treatment of severe barbiturate poisoning. Unfortunately, it is a rather complex technique.

PATHOLOGY

Carcinoma in Situ of the Stomach. J. J. Bocian and A. E. Geschke. A. M. A. Arch. Path. 65:6-11 (Jan.) 1958 [Chicago].

A 52-year-old Armenian woman complained of vague intermittent epigastric discomfort of 2 years' duration. The patient had undergone cholecystectomy in 1931 and subtotal thyroidectomy for an adenomatous goiter in 1956. Examination revealed a fairly well-developed and well-nourished patient in no discomfort at the time of examination, in whom 8 degrees of HC1 (hydrochloric acid) was obtained only an hour after histamine injection. A fluoroscopic and roentgenographic examination of the upper gastrointestinal tract gave the impression of a change in the outline along the distal portion of the greater curvature of the stomach and suggested a moderate elevation of the mucosa. An exploratory laparotomy revealed extremely dense and extensive adhesions presumably due to the previous cholecystectomy. An exploratory gastrostomy was done in the absence of any palpable abnormalities of the area. A biopsy specimen from the area designated as having a change in outline revealed markedly hyperplastic gastric mucosa to the point of its having intestinalized. It formed atypical glandular cystic cavities. There were many mitoses, many of which were abnormal. The cells lining the glands were hyperchromatic, showing a definite loss of polarity. Nuclei different in size, shape, and staining qualities were found at all levels of the cells. The transition between normal and abnormal glands was abrupt, and multiple serial sectioning and serial block examination failed to reveal any evidence of submucosal extension. Since neither the extent of the tumor nor the possibility of multiple tumors could be ascertained, a high subtotal gastrectomy was done with the resection of five-sixths of the stomach, omentum, and subpyloric nodes. In view of the fact that carcinoma in situ, in general, presents a normal gross appearance, it is suggested that biopsy specimens be taken from those stomachs where negative findings prevail in an effort to increase the detection of early carcinoma and to subsequently reduce the rate of mortality from cancer of the stomach, which now numbers 25,000 to 40,000 per year in the United States.

Moniliasis: Review. A. Stenderup. Tidsskr. norske lægefor. 77:939-944 (Nov. 1) 1957 (In Danish) [Oslo].

In recent years fungus infections, especially moniliasis, have become more frequent. The infections occur particularly in patients during chemotherapy, and chemotherapeutics are by most authors believed to play a part in their origin. The mechanism of the origin is not clear. Many of the cases reported are systemic infections, usually grave. Proliferation of fungi often takes place during treatment, especially with broad spectrum antibiotics, and an increased number of fungi in the organism can reasonably be assumed to increase the possibility of clinical infection due to the fungi. Other factors must also be active. Vitamin B_2 deficiency may be significant. The diagnosis of moniliasis cannot always be based on the fungi findings alone. The value of a number of substances being tested for the treatment of moniliasis is not yet demonstrable.

Moniliasis: Clinical Material. A. Stenderup and E. Beeken. Tidsskr. norske lægefor. 77:944-946 (Nov. 1) 1957 (In Danish) [Oslo].

The pathogenesis in moniliasis is not known. It does not always follow that with proliferation of Candida albicans in the mucous membranes of the organism the fungi become rooted in the tissues. The vitamin balance in the organism, particularly the vitamin B balance, may perhaps play a part, but it is probably not the only factor. Fifty-two patients in whom Candida albicans was found in large numbers had clinically demonstrable moniliasis. Thirty-two of the patients had Hodgkin's disease, leukemia, or cancer. Most of them were in poor general condition and had been treated with antibacterial or antineoplastic chemotherapeutics, roentgentherapy, or ACTH and cortisone.

Local Cures Obtained in Patients with Cavities Which Remained Open after Prolonged Chemotherapy; Definite and Possible Cures: Study of 114 Anatomically Confirmed Cases. P. Renault and E. Bernard. Rev. tuberc. 21:893-916 (Sept.-Oct.) 1957 (In French) [Paris].

The authors studied 935 surgical specimens obtained from patients with pulmonary tuberculosis for which they had been treated preoperatively with 2 or 3 antibacterial drugs, isoniazid serving as the medicamentous axis. Of 615 specimens which contained open cavitary lesions at some time in the course of the patient's disease, 101 with compact caseous or fibrous residues were excluded. The remaining 414 specimens contained open cavitary lesions at the time of the surgical intervention. Three hundred of these contained cavities the caseous walls of which were still the seat of active tuberculous infection, 65 (18%) contained cicatricial cavities, and the remaining 49 contained completely cleansed but not healed cavities. Of the 65 specimens 3 were observed in 1953, 11 in 1954, 24 in 1955, and 27 in 1956. The incidence of local cures among the cavities which had remained open thus showed a progressive increase from year to year. In most of the specimens with cicatricial cavities, healing of the cavities was associated with a total or subtotal cure of all the other tuberculous foci present in the lung. Of the 49 completely cleansed but not healed cavities, 18 showed partial cicatrization and some of these approached the stage of complete cicatrization, 31 did not show any parietal cicatrization but showed simple cleansing; most of these seemed to be still virulent tuberculous foci, the significance of which remained vague.

A study of the clinical and bacteriological circumstances of the healing process was carried out with 62 of the 65 specimens with cicatricial cavities. In 29 of the 62 cases prolonged antibacterial treatment had been practiced for recent lesions; in 24 cases this treatment had been applied to old lesions or to lesions which recurred after collapse therapy or after a first course of chemotherapy. In the remaining 9 cases these circumstances were not known. The duration of antibacterial treatment was 6 months to 1 year in 30 cases, more than 1 year in 25, and not known in 7. The chest roentgenogram findings concerning these cavities were not significant except for the fact that in only 8 of the 62 cases the roentgenologic appearance was that of a progressive thinning of the shadow of the cavitary wall which may or may not be associated with an increase of volume, an enlargement of the cavity. The sputums had become negative for more than 6 months before the surgical intervention in 41 cases, and tubercle bacilli had been observed regularly in 2 up to the time of the surgical intervention. These findings suggest that clinical diagnosis of "open healing" of the tuberculous activities is always associated with an appreciable risk, and many of the cicatricial cavities may not be detected by the present means of exploration. In the light of these facts, the indications for the present methods of surgical treatment deserve certain revision, but workers should be cautioned against a systematic change in therapeutic attitude which would not be justified by the presently available means of diagnosis.

Pathological Morphologic Changes of the Heart in Poliomyelitis. E. K. Zhukova. Arkh. pat. 19:15-25 (No. 11) 1957 (In Russian) [Moscow].

A detailed histological study of the heart was carried out in 18 lethal cases of acute poliomyelitis. Interstitial myocarditis was revealed in 2 cases. Circulatory disturbances, perivascular and interstitial edema, proliferation of the cellular elements of the stroma, and slight dystrophic changes in the muscle fibers of various degrees were noted in the other 16 cases. The author does not consider these changes in the myocardium to be due to myocarditis in the clinicoanatomical sense, since they may be frequently found in various infectious toxic diseases without the corresponding clinical manifestations. Not a single case of endocarditis or pericarditis was noted. Various degrees and diffuse dystrophic changes of the nerve cells were demonstrated in the nervous system. These changes ranged from mild (in the form of a swelling) to grave (pyknosis and "shade" cells). The system of transmission of the nerve impulse in the heart was not affected.

Complications in Antirabic Vaccination. Ts. B. Khaime and V. S. Schnirova. Arkh. pat. 19:69-77 (No. 11) 1957 (In Russian) [Moscow].

Five instances of complications after antirabic vaccinations are reported. Two patients had neuroparalytic complications. Both patients recovered.

In 2 patients shock appeared after the 13th injection of the vaccine. In 1 of these shock was complicated by grave brain involvement with oculomotor and bulbar disturbances. The patient died on the 3rd day. Autopsy revealed foci of red softening in the cerebral hemispheres and in the vermis cerebelli with hemorrhage into the 4th ventricle. Profuse hemorrhages were found in the skin of the head, the body and the extremities. Microscopically, hemorrhagic necrosis with resorption and beginning organization were found in the pons varoli and in the cortex of the cerebral hemispheres. Small foci of demyelinization were demonstrable in the optic tract and in the white matter of the cerebellar hemispheres. The 5th patient had an acute condition with the initial symptoms of affection of the central and peripheral nervous systems, such as headache and paraesthesia of the extremities. Personal experience and data from literature show the possibility of combination of various complications in the same patient. This supports the conception of a single etiology in different types of complications developing after vaccination. Probably this single etiological factor is the proteins of the brain substance of rabbits. The disease appears as a result of allergic reaction of the organism to repeated introduction of foreign proteins. A special reactivity of the organism evidently plays an important part.

A Study of the Relationship Between Sickling and Hookworms. G. F. Jacob. East African M. J. 34:597-600 (Nov.) 1957 [Nairobi].

It is now well established that the possession of the sickle cell trait confers some degree of protection against the more severe effects of falciparum malaria. The hookworm is a blood-feeding parasite and is of widespread distribution throughout the tropics; its geographical range is broadly comparable to that of malaria. Since high sickling rates occur where falciparum malaria is endemic, it must also be true that high sickling rates will be found in areas where hookworm rates are high. The relationship between the sickling trait and hookworm infestation had been studied by Beet in 1946, with the result that 50% of 102 patients with sickling and 52% of 149 patients without were found to be infested with hookworm. This report is concerned with studies carried out in a village of 300 people. The blood was investigated for sickling and for the hemoglobin content, and the stools were examined for hookworms and occult blood. There was no difference in hookworm infestation rates between those with the sickling trait and those without this trait. The mean hemoglobin values were slightly lower in those without the sickling trait. No diminution in the effects of hookworm infestation in persons with the sickling trait has been demonstrated in this series. It is possible that the lowered hemoglobin values in the persons without the sickling trait would reach the level of statistical significance if the series were larger, but even if malaria were then excluded and the difference were proved to be related to hookworms, it is so small an effect as to be of no practical significance.

RADIOLOGY

Radiation Treatment of Cancer of the Thoracic Oesophagus. L. M. Gol'dshtein. Probl. Onc. 3:311-320 (No. 3) 1957 [New York].

The author reports on 119 patients with cancer of the esophagus who were given irradiation treatment at the radiologic department of the Institute of Oncology in Leningrad, U.S.S.R., between 1947 and 1956. The presence of a tumor was established by radiologic examination. Esophagoscopy supplemented by biopsy was performed in patients in whom there was doubt as to the correctness of the diagnosis. The cervical portion of the esophagus was the site of the tumor in 12 patients, the upper two-thirds of the thoracic part of the esophagus in 102, and the lower thoracic part in 5. The essential features of the irradiation therapy employed was prolonged, fractional, low-intensity radiation of the tumor with roentgen rays through a lead grid from 2 and, less frequently, from 3 skin fields, measuring 6 by 8 or 6 by 10 cm., directly onto the tumor. The technical factors were 180-200 kv. and 1-2 mm. copper filtration at a skin focus distance of 50 to 60 cm. The half-value layer was 1.4-1.7 mm. copper. The minute strength of a dose at the surface of the skin field used under the lead grid was 5-10 r. The tumor was radiated daily from 2 fields. The individual dose to the tumor focus was then 100-150 r. The total duration of treatment was 6-8 weeks, in the course of which the tumor was given a total radiation dosage of 4,000-7,000 r.

Sixty-nine (67.7%) of the 102 patients with cancer of the thoracic part of the esophagus showed definite subjective and objective improvement in varying degree, manifested by improvement in the general condition, increase in weight, disappearance of pain and dysphagic symptoms, and increased patency of the esophagus. Radiologic examination of the esophagus revealed a marked reduction in the size or sometimes even complete disappearance of irradiated tumor. Signs of radiation sickness were absent in most of the patients, and the vitally important organs, through which in other irradiation methods x-rays from many fields are directed on the tumor, were not subjected to excessive irradiation. In 2 patients who died after irradiation treatment of remote metastases, the complete absence of the primary tumor from the irradiated area was confirmed by microscopic examination. In 1 patient who died of cerebral hemorrhage and who had remained in good health for 3 years and

8 months after irradiation treatment for cancer of the esophagus, autopsy revealed aggregations of cancer cells at several points in the smooth cicatrized esophageal wall. In view of these and other similar observations, a second (antirecurrence) course of irradiation treatment should be given 3-5 months after the successful original course of treatment in order to consolidate the results. Of the 102 patients with cancer of the upper two-thirds of the thoracic esophagus, 76 (74.4%) survived for less than 1 year, 19 (18.7%) for 1 to 2 years, 4 (3.9%) for 2 to 3 years, and 3 (2.8%) for 3 to 5 years. Of 130 patients not submitted to irradiation therapy, only 7 (5.4%) lived for more than 1 year, while 26 (25.4%) of the 102 patients submitted to irradiation therapy survived longer than this period. Although only 3 (2.8%) of the 102 patients were alive and in good health 3 years after the irradiation treatment, the temporary relief of suffering and amelioration of the conditions of their existence in most patients subjected to this treatment is as important as attempts, not by any means always effective, in radical treatment of some individual patients by surgical methods. The author suggests that for elderly patients with cancer in the thoracic part of the esophagus in whom the risk of surgical intervention is unusually great and the chances of lasting cure extremely uncertain, irradiation methods are preferable to surgical methods of treatment.

Retrograde Aortography by Percutaneous Femoral Artery Catheterization. P. Bétoulières, M. Pelissier and R. Mimran. Press. méd. 65:2159-2162 (Dec. 25) 1957 (In French) [Paris].

Retrograde aortography by percutaneous catheterization of the femoral artery was performed by the authors for contrast studies of all the segments of the aorta, as well as of certain collateral vessels, particularly the vertebral artery, the subclavian arteries, and the carotid arteries. The catheter was passed even into the left ventricle in order to obtain an intracavitary roentgenogram of the left side of the heart. The equipment used was the same as that employed by Seldinger, consisting of a puncture needle, a flexible metal guide, and a polyethylene catheter of the same gauge as the needle. After puncture, the needle was replaced by the catheter with the help of a guide, thus preventing arterial trauma. Since compounds rich in iodine are quite viscid, the authors prefer the use of substances of moderate concentration as contrast mediums, such as diluted Radioselectan, a proprietary aqueous solution containing sodium and methylglucamine salts of diatrizoate. With this technique, the method has elective indications for which it appears to be irreplaceable. It is definitely harmless and is readily performed. Its possibilities in the field of vascular exploration are great, since it provides visualization of the major arterial circulation from the sigmoid region to the distal vascular ramifications in the extremities, the body trunk, and the head and neck region. As it requires only a small amount of contrast medium, the examination may be repeated several times to vary the incidence of the rays with the patient in different positions, since he can be moved without risk once the catheter has been fixed in situ. Although retrograde aortography by catheterization of the femoral artery does not tend to replace systematically the other methods of aortography, namely, direct thoracic aortography, counter-current retrograde aortography, and translumbar abdominal aortography, it may be a useful substitute for these methods in certain cases. It should, therefore, be considered as a complementary technique of great value.

PUBLIC HEALTH

Clinical and Experimental Findings on the Correlation Between Dental Caries and Metabolism of the Thyroid Gland and Fluorine. O. Tempestini. Minerva stomatol. 6:287-292 (Nov.) 1957 (In Italian) [Turin, Italy].

Dental caries experiments on rats, performed in the author's clinic, have shown that addition of desiccated thyroid to the diet has the same effect in prevention of dental caries as 20 μg of fluorine per liter of drinking water. A survey of 11 towns in the provinces of Calabria and Sicily revealed a distinct correlation between the fluorine content of drinking water and dental caries in children 11 to 15 years of age. The higher the fluorine content of drinking water, the lower was the incidence of dental caries, and conversely. In 2 other towns, where more than a half of the population had goiter, the correlation between the incidence of fluorosis or dental caries and fluorine content of drinking water did not follow the expected clinical pattern. In 1 town fluorosis was endemic despite the low fluorine content of drinking water, whereas fluorosis was absent in the other town, where a low fluorine content of drinking water was found. A higher incidence of dental caries was observed in these 2 towns than in the others where there was no incidence of goiter. Caries was more severe in children between the ages of 11 to 15 years than in those aged between 6 and 10 years. The author concludes that hypothyroidism both predisposes to the incidence of dental caries and partially inhibits the fluorine action of preventing dental caries in young persons during the period of dental formation. The indiscriminate fluoridation of public water supply for prevention of dental caries may produce fluorosis and undesirable side-effects in persons with deficiency of thyroid activity, without affording benefit for the prevention of dental caries.

BOOK REVIEWS

Orthopedics for the General Practitioner. By William E. Kenney, M.D., Orthopedic Surgeon, Truesdale Hospital, Fall River, Mass., and Carroll B. Larson, M.D., F.A.C.S., Professor of Orthopedic Surgery and Chairman of Department of Orthopedic Surgery, State University of Iowa, Iowa City. Cloth. $11.50. Pp. 413, with 180 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1957.

The authors of this reference book explain in their preface that the public expects a great deal of the general practitioner from the standpoint of knowledge of everything medical or surgical. This book is intended to help him evaluate his orthopedic problems and to treat those that come within his capabilities. Both authors understand the problems experienced by general practitioners and what they need in order to help them to render good care to their patients. The first section deals with the orthopedic diseases and infections of childhood. The subject matter is subdivided according to the anatomic location of the complaint or condition under discussion. Orthopedic problems of the adult are well outlined. The recommended treatment is usually practical and easy to carry out. The last two chapters deal with arthritis and bone tumors. These chapters should be of great help to the general practitioner who has puzzled over some obscure lesion and must decide whether or not he shall undertake the treatment himself or refer the patient to a specialist. This book should be of help to most general practitioners.

An Introduction to Functional Anatomy. By David Sinclair, M.A., M.D., Professor of Anatomy, University of Western Australia, Perth, Australia. Cloth. $8.50. Pp. 426, with 166 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

This book is intended primarily for training courses in paramedical sciences, especially for occupational therapists and physiotherapists. Its major premise is embodied in the statement in the preface that physiotherapists and occupational therapists must have a knowledge of the locomotor system much in excess of that required by most nurses. Hence, the author made choices in topics and in the extent of treatment which overwhelmingly favor the skeletal, muscular, and nervous systems. He is inclined to allow such ancillary specialists merely a nodding acquaintance with other organ systems. Such a deliberately unbalanced presentation limits the usefulness of the book in other fields. The best features of this text reside in its pleasant style and in the emphasis on the functional aspects of some organ systems and of the body organization as a whole.

This is not old-fashioned, dull anatomy cut down to the barest requirements of college courses. Color is added, now and then, by an English turn of phrase, such as "a desire for elevenses or afternoon tea" (on blood sugar levels), the "breakdown of roast mutton" (on protein metabolism), and "to make bricks without straw" (on simple goiter, also called "Derbyshire neck"). One might question the less favorable features pertaining to the highly summarized treatment of fairly complex anatomi and particularly physiological and biochemical con ditions of the human body. A compendium-lik treatment may favor memorization rather than th learning of basic facts, which a beginner mus understand before a summary can really be mean ingful. About one-half of the book is devoted tissues and systems, with a space allotment for th nervous system of four or five to one compare with muscle or the circulatory system and bloo Epithelium and connective tissue are given on the most cursory treatment, and the descriptions of the digestive, genitourinary, and endocrine systems are kept within only a few pages. In the second half there are brief chapters on metabolism, posture, and muscular activity. A major chapter on topographical anatomy again stresses the somatic motor apparatus, especially of the upper and lower limbs. The book has an interesting glossary of 15 pages, explaining Greek and Latin terms, and a good index. A few other English texts are mentioned for collateral reading.

Hemophilia and Hemophilioid Diseases: International Symposium. Editor: Kenneth M. Brinkhous, M.D., Professor of Pathology, University of North Carolina, Chapel Hill. Symposium sponsored by National Hemophilia Foundation and held at Ambassador Hotel, New York City, August 24-25, 1956. Publication of book was aided by grant through National Hemophilia Foundation from Gustavus and Louise Pfeiffer Research Foundation. Cloth. $7.50. Pp. 265, with illustrations. University of North Carolina Press, Chapel Hill, 1957.

The first section of this book deals with the clotting defect in hemophilia. The antihemophilic factor, the isolation and assay of antihemophilic globulin, and standardization of so-called antihemophilic fractions are discussed by American, Swiss, and French authors respectively. Then follow four papers on inhibitors and hemophilia, specifically on the role of certain plasma factors and anticoagulants. Contrary to claims made previously,

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These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

antibodies against clotting factors could not be demonstrated by Pennalver and associates. Deficiency of hemostasis and of platelets are the subject of the two concluding papers of section 1. Parahemophilia, proconvertin deficiency, plasma thromboplastin component deficiency, plasma thromboplastin antecedent deficiency, and the so-called Hageman trait are discussed in section 2. Five papers deal with genetic and marriage problems, three with problems of diagnosis, and four with management in sections 3, 4, and 5. A beautifully illustrated paper on the pathology of hemarthrosis in hemophiliac dogs and papers on bone and joint complications, management and orthopedic rehabilitation, and psychiatric and medicosocial aspects are contained in the two final sections. The international composition of the original papers and of the discussions which follow each section makes the presentations highly diversified and stimulating. One gets a clear picture of the current knowledge and of the limitations in our understanding of this complex subject. The frontispiece portrait of John C. Otto, the Philadelphia physician who is given the credit for the first description of hemophilia, suggests that historically minded readers might have appreciated a direct discussion of the exciting history of this puzzling disease. Those responsible for the organization of this symposium and for making the proceedings generally available deserve commendation. The book will be found indispensable by students of hemophilia and valuable by physicians in general.

Morphologie und Physiologie des Nervensystems. Von Prof. Dr. med. et phil. Paul Glees, M.A. Cloth. 58 marks; $13.80. Pp. 445, with 149 illustrations. Georg Thieme Verlag, Herdweg 63, (14a) Stuttgart N, West Germany; [Intercontinental Medical Book Corporation, 381 Fourth Ave., New York 16], 1957.

The author attempts to present the morphology and physiology of the nervous system in a book of 445 pages, of which 50 pages are used for references, 25 for the index, and a large part for the excellent figures and diagrams. It is, therefore, not surprising that the author is unable to give a reasonably complete account of neurophysiology. For instance, the chapter on the autonomic nervous system comprises 4 pages. The classic work of Magnus on postural and righting reflexes and the significance of the medulla oblongata for respiratory and autonomic functions are not mentioned. Frequently, newer results are discussed in detail, but the earlier fundamental work necessary for the understanding and evaluation of more recent data is not presented. Thus the chapter on nervous conduction deals with the theory of saltatory conduction but fails to mention the all-or-none principle. The book will be valuable for the German reader because it includes a good deal of the recent Anglo-American literature. The author is more familiar with anatomic than with physiological work. The description of the anatomic methods of experimental neurology and the anatomic considerations (often including comparative anatomy and neurology) are valuable. Because of many omissions the book is not recommended to the beginner, but the expert may read it with profit. The illustrations, binding, and printing are excellent.

Gynecologic and Obstetric Pathology, with Clinical and Endocrine Relations. By Emil Novak, A.B., M.D., D.Sc., and Edmund R. Novak, A.B., M.D., Assistant Professor of Gynecology, Johns Hopkins Medical School, Baltimore. Fourth edition. Cloth. $14. Pp. 650, with 683 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1958.

The fourth edition of Novak's world famous book on gynecologic and obstetric pathology has lost nothing by the sad death of Emil Novak. As Edmund Novak says in the preface, he and Donald Woodruff worked so closely with Emil Novak that they could predict his reactions to various concepts, trends of thought, and articles by various authors. This edition is 55 pages longer and contains 33 more illustrations than the previous one. In it there is amplification of such important pathological problems as the relationship of basal cell hyperactivity to intraepithelial cancer and endometrial hyperplasia to adenocarcinoma and genital tuberculosis. R. E. L. Nesbitt completely rewrote the chapters on implantation and placentation and abnormalities of the placenta and appendages other than hydatidiform mole and chorionepithelioma, and John K. Frost prepared an outstanding chapter on gynecologic and obstetric exfoliative cytopathology. The bibliography has been brought up to date, and many old illustrations have been replaced by better ones. The book is well printed, and, as with all of Emil Novak's publications, the text is most interesting to read. This edition should remain a classic in its field.

Thromboelastography. By Pietro de Nicola, Associate Professor, Department of Medicine, University of Pavia, Italy. Publication number 316, American Lecture Series, monograph in American Lectures in Pharmacology. Edited by Chauncey D. Leake, Ph.D. Cloth. $5.50. Pp. 110, with 85 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

Thromboelastography, a process for recording graphically the clotting of blood or recalcified plasma, was introduced in 1948 by H. Hartert in Germany. Since then numerous references have appeared in medical journals. In this timely monograph the author explains in simple terms how the thromboelastograph is made and its clinical significance. Fundamentally, the curve is recorded photographically from the retardation of a plunger in a vial of blood which is rotated back and forth.

Initially, there is a straight line, but, as the blood clots, this divides into two lines. The resulting graph varies with different diseases, as well as with different medicaments and reagents. The three components, reaction time, clot formation time, and maximum amplitude can be measured and plotted graphically. Numerous thromboelastographs are given in the book, with the curves that can be plotted from them. The data are clearly presented, and the monograph should be valuable as a help in understanding published figures and references to thromboelastography.

Fundamentals of Electrocardiography and Vectorcardiography. By Lawrence E. Lamb, M.D., Director of Cardiology and Chief, Department of Internal Medicine, Air University, School of Aviation Medicine, USAF, Randolph Air Force Base, Texas. Cloth. $9.50. Pp. 142, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

Although methods of teaching electrocardiography vary widely, there is an increasing tendency to present the fundamentals of electrocardiography and vectorcardiography in one package, as has been done in this book. Starting with the basic electrical behavior in cells, the subject matter is gradually developed through electrical events in the normal heart and the changes occurring with disease. In adhering to fundamental concepts, the author has given scant attention to clinical electrocardiography. For instance, only eight pages are devoted to myocardial infarction. The text is concise, being at times almost in outline form. Some amplification in certain areas would make for easier reading. This book may be of some help to students receiving their first introduction to electrocardiography. It may also be of value to the cardiologist who would like to brush up on the fundamentals of electrocardiography, but it cannot be used as a reference for clinical electrocardiography.

Chemotherapy and the Central Nervous System. By Henry McIlwain, Ph.D., D.Sc., Professor of Biochemistry, University of London at Institute of Psychiatry (British Postgraduate Medical Federation), London. Cloth. $10. Pp. 328, with 61 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6; J. & A. Churchill, Ltd., 104 Gloucester Place, Portman Sq., London, W.1, England, 1957.

In this age of esoteric scientific literature, it is most satisfying to read a work that deals not only with the author's particular investigations but also relates them to investigations in allied disciplines, providing a sense of perspective for the reader. The book has two main themes: the development of principles and methods of chemotherapy and the application of chemotherapy in the treatment of mental disorders. The opening chapters discuss the early attempts to apply synthetic organic chemistry to the treatment of disease, particularly diseases involving the brain. These chapters include general depressants, control of body temperature, and the action of drugs on the body and disturbing agent. There is much material on infection and the central nervous system describing the triumphs achieved by the synthesis of specific chemical agents designed to damage the infecting parasite. The discovery and application of sulfonamides and antibiotics and the new principles they brought to chemotherapy are discussed separately under metabolic and biological antagonisms. Additional chapters are concerned with epilepsy and the anticonvulsant drugs and the analgesics. Other specific nervous and mental disorders and the excitant and depressant drugs used in their treatment are also considered. The final chapter relates three subjects concerned with the development of therapeutically active chemical substances: chemotherapy and the central nervous system, common factors in the synthesis of new drugs and relationships between synthetic drugs and biologically active compounds of natural origin.

The Anatomy of Congenital Pulmonary Stenosis. By Sir Russell Brock, M.S., F.R.C.S., F.A.C.S., Thoracic Surgeon to Guy's Hospital, London. Cloth. $7.50. Pp. 114, with 77 illustrations. Paul B. Hoeber, Inc. (medical book department of Harper & Brothers), 49 E. 33rd St., New York 16, 1957.

This well-written monograph covers in great detail what has been learned about congenital pulmonary stenosis by many investigators and especially by the author. The embryological development of the heart, always a difficult subject to present, is concisely covered and suitably illustrated. The most important features of this treatise are the descriptions of the various kinds of pulmonary stenosis and associated anomalies. Much emphasis is placed on the mechanics of the right ventricle in infundibular stenosis and on the importance of studying the lesions during life rather than at postmortem examination "when the heart is inert, rigid, contracted, and often hardened by fixation." The author gives a detailed account of the lesions in Fallot's tetralogy as he has found them in 168 patients who have undergone infundibulectomy, an operation that he perfected. This fine book should be a welcome addition to the library of those who are interested in this phase of congenital heart disease.

Introduction to Clinical Endocrinology. By A. Stuart Mason, M.A., M.D., B.Ch., Senior Lecturer, Medical Unit, London Hospital, London. Cloth. $4.50. Pp. 192. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

The original purpose of this brief textbook was to present the subject of clinical endocrinology in terms of applied physiology. In actuality, however, it is rather a brief review of endocrinological disorders with only scant consideration of the underlying physiological principles. As a consequence, it fulfills neither the needs for a detailed practical text nor those of a theoretical treatise. Although the book is well written in an excellent style, the absence of any illustrations or references detract from its value. The subject matter is, in general, soundly presented but not completely up to date. For example, no mention is made of the Thorn test for adrenal insufficiency, the phosphate excretion test for the presence of a parathyroid tumor, enzymatic deficiency as a cause of cretinism, or the important manifestations of toxic adenoma of the thyroid. Despite these criticisms, the present volume should serve as a good review of the subject for anyone requiring a brief resume of clinical endocrinology, including the diagnostic and therapeutic aspects of the subject.

Clinical Orthopaedics. Number Ten, Fall, 1957. Anthony F. DePalma, editor-in-chief. With assistance of asssociate editors, Board of Advisory Editors and Board of Corresponding Editors. Cloth. $7.50. Pp. 367, with illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada; Pitman Medical Publishing Company, Ltd., 45 New Oxford St., London, W.C.1, England, 1957.

In format and general appearance, this book matches the previous ones of this series. Its first portion is an eloquent tribute to the late Dr. Dallas B. Phemister. The second section deals with affections of growth centers, and each chapter within this section deals primarily with specific epiphysial lesions. Throughout this section the x-ray reproductions, in general, are not as good as in previous volumes, and the editors should insist on better roentgenographic reproductions. There are some mildly controversial statements, but these should stimulate the readers to further investigation. The next section is a continuation of the symposium on pathologic physiology of metabolic bone disorders; the first portion appeared in volume 9. This symposium is rather complete, and the bibliography is extensive. The last section considers general orthopedic problems. Most of these are well presented. In general, this volume maintains the high standards that have been set by this publication.

Surgery of the Biliary Tract, Pancreas & Spleen. By Charles B. Puestow, M.D., Ph.D., Clinical Professor of Surgery, College of Medicine and Graduate College, University of Illinois, Chicago. A Handbook of Operative Surgery. Second edition. Cloth. $9.75. Pp. 381, with 72 illustration by Jessie W. Phillips. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1957.

This is one of six handbooks of operative surgery, all with a similar format. Each chapter begins with a brief discussion of the problem considered, followed by verbal and pictorial descriptions of operative techniques. The concise verbal presentation is always on the page opposite the diagram depicting the steps of the operation. The first edition, published in 1953, was a valuable contribution to the literature on operative technique and was well received. The new edition constitutes more of a second printing than a second edition, for 95% of the original book is reprinted verbatim. The only section which has undergone significant revision is the chapter on indications and contraindications for splenectomy. A brief discusssion of intravenous cholangiography has been added, and one new operative procedure, caudal pancreaticojejunostomy, is described. This book is highly recommended to those not familiar with the first edition.

Principles of Ophthalmoscopy. By John K. Erbaugh, M.D. Cloth. $5.50. Pp. 69, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1958.

This monograph is a practical, simplified, yet accurate description of the findings and changes in the ocular fundus in health and in disease. It is intended primarily for the general practitioner, the internist, and the student of ophthalmology. It also serves to reemphasize and reclarify the funduscopic picture seen daily by the practicing ophthalmologist. The description of the sizes of normal disks and color, physiological depression, and true analysis of retinopathies are all reevaluated for him. The student should find it of tremendous benefit in understanding the principles of ophthalmoscopy and the use of the ophthalmoscope. The text is readable and well sprinkled with colored photographs, diagrams, and fundus pictures. It should be a welcome addition in the library of any student of ophthalmology, internist, or teacher of ophthalmoscopy.

Self-Help Devices for Rehabilitation. A co-operative service project made possible by National Foundation for Infantile Paralysis and conducted by New York University-Bellevue Medical Center, Institute of Physical Medicine and Rehabilitation. [Ninth report.] Paper. No pagination, with illustrations. Institute of Physical Medicine and Rehabilitation, 400 E. 34th St., New York 16, n.d.

This is another in a series of reports on various self-help devices. It is intended for insertion in a loose-leaf notebook. It covers a wide range of devices, including a special cuff to aid in holding a hair brush, one-handed fingernail clipper and file, toothbrush holder, work table and book rest for use by the supine patient, and many other aids to the handicapped. Either the commercial source of supply of each of the devices is given or detailed construction diagrams are provided in each case.

QUESTIONS AND ANSWERS

DIET FOR WEIGHT REDUCTION

To the Editor:—*A recent article appeared in* The Journal *(Thorpe, G. L.: Treating Overweight Patients, 165:1361-1365 [Nov. 16] 1957) describing a diet for obesity. In it the patient is limited to a lean meat and fat diet composed of three parts of lean meat to one part of fat. Carbohydrates were eliminated. In view of the number of articles that have appeared on cases of atherosclerosis in which high blood cholesterol levels were found, will you discuss the possible harmful effect that ingestion of so much fat would produce? Is there any scientific basis for the claim that the ingestion of a large amount of fat will burn up other fat without deleterious effect? What is the least harmful diet that one can utilize in obesity?* M.D., *Washington, D. C.*

Answer.—Many types of diet have been used successfully in the treatment of obesity, and weight loss has resulted if calorie intake was less than calorie expenditure. The high-fat diet is based on the work of Pennington, which was quoted extensively in the article cited in the question. Pennington's findings have several possible interpretations. His conclusions are based largely on hypothesis rather than proof and require substantiation before they can be accepted. Scientific evidence that ingestion of large amounts of fat will burn up other fat is indeed meagre.

In the opinion of most authorities, a diet for weight reduction should be adequate in all essential nutrients but restricted in calories. It should closely resemble a good or normal diet so that the patient may learn proper eating habits. The lean meat and fat diet does not fulfill these criteria. The high fat content of this diet may be undesirable in view of possible relationships between dietary fat intake, serum lipid levels, and the development of atherosclerosis. Such a diet does not teach optimal dietary habits. Much remains to be learned about relationships between dietary fat and atherosclerosis. It has been shown that concentrations of serum cholesterol and other lipids are increased by diets high in fat and decreased when diets low in fat or diets high in polyunsaturated fatty acids are administered. Meat fat contains only small amounts of these unsaturated fatty acids, whereas most vegetable oils contain large amounts. It has been reported, also, that serum cholesterol levels tend to decrease during periods of weight loss. This has been found in subjects eating ordinary diets containing moderate amounts of fat, but serum lipids apparently have not been studied during high-fat reducing regimens. Even if such levels are not adversely affected, there is some evidence to suggest that postprandial lipemia may have an adverse influence on the clotting mechanism. While elevated serum lipid levels have not been demonstrated to be causally related to atherosclerosis and coronary artery thrombosis, considerable evidence suggests that hyperlipidemia and hypercholesterolemia may have some role in the pathogeneses of these conditions. Until more is known, it would seem wise to avoid excessive fat intake both during and after weight reduction.

Since the relation between blood lipids and arteriosclerosis and the relation between diet and blood lipids are both matters of controversy, a qualified answer is necessary. It should be emphasized that there is no evidence to show that a high proportion of fat in a diet limited in total quantity is capable of raising the blood cholesterol concentration. Even in maintenance diets, the role of fat in controlling the concentration of cholesterol may relate more to the kind of fat than to its quantity. Indeed, it is possible to change the concentration of cholesterol by an isocaloric substitution of a saturated fat by an unsaturated one. The question as to the least harmful diet in obesity is one that provokes many schools of opinion. The fact that there is so much controversy on this point strongly suggests that there is no convincing evidence to answer it. The most reasonable diet to employ for weight reduction is one that maintains normal proportions of fat, proteins, and carbohydrates and simply limits the total quantity of the mixture.

PREVENTING FUNGUS INFECTION IN SCHOOL GYMNASIUMS

To the Editor:—*What is a means of preventing spread of fungous infection in the school shower room or gymnasium?* M.D., *New York.*

Answer.—Recent experiments coupled with the clinical experience of physicians provide the foundation for a changed viewpoint on the causal factors of epidermophytosis. For many years preventive measures were based on the assumption that fungous disease resulted from walking on surfaces contaminated with fungi. However, attempts to

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

roduce fungous disease of the feet by deliberately xposing the feet of volunteers to a solution known contain pathogenic fungi have been unsuccessful.

Those conducting the studies to which reference as been made consider the condition of the inividual's skin a most important factor in deterining whether or not he will develop fungous disase following exposure. They suggest that fungi re usually present on clinically healthy skin, that reventing exposure to fungi may not be possible, nd that disease results from exposure only when e individual's skin is favorable to such fungous rowth. One of the conclusions is that "individual ygiene, especially the use of methods designed to aintain and increase the resistance of skin of e feet, is of the greatest importance for the preention of fungous disease of the feet."

Complete eradication of fungi from locker and ower rooms is practically impossible because ores are long-lived and remain dormant for exnded periods of time. Nevertheless, thorough rubbing of floors is recommended. This should e done daily, using hot water and soap. Foot aths are not recommended for preventive puroses in either shower rooms or swimming pools. heir value is negligible, and they soon become irty, insanitary, and unattractive. They are condered a hazard by some persons because they romote a false sense of security and tend to lessen mphasis on proper personal care of the feet. The ost important preventive procedure is education f pupils regarding personal practices.

FFECTS OF ELECTRICAL SHOCKS

o THE EDITOR:—*What are the possible long-term effects of two high-voltage electrical shocks separated by an interval of two years? The voltage was sufficient to produce second-degree burns at the site of entry and exit and to produce amnesia for a period of two to three days. Specifically, what is the nature of the long-term tension-anxiety state? Is it known whether or not the wide variety of rather bizarre physical symptoms which follow shocks are due to organic or "functional" disturbance of the central nervous system? Any comments concerning the prognosis and long-term outlook of such patients would be appreciated.*

John W. Wilson Jr., M.D., Conway, S. C.

ANSWER.—The long-term effects of high-voltage lectrical shock are extremely variable as to both egree and duration. Voltage is not so much a etermining factor as is strength of current, i. e. mperage (difficult to ascertain) at the point of ontact and pathway through the body. Burns proluced from high voltage are almost always deeper han second degree. The presence of amnesia in he case cited suggests that there was unconsciousess. The amnesia is often retrograde, and there may be associated bizarre symptoms best described as auditory or visual hallucinations. Long-term anxiety states strongly imply preexisting deep-seated emotional disturbance and/or unexpressed or expressed wishes for compensation, unless the period of unconsciousnesss was sufficiently long to cause central nervous system pathology which would be similar to that following periods of unconsciousness from other causes in which there has been circulatory or respiratory impairment with prolonged anoxia. If the current traversed the spinal cord, as from arm to arm, there could be symptoms of progressive degenerative spinal cord lesions which appear bizarre but which should present localizing neurological findings and would of course have an organic basis. The prognosis in instances where the disturbance definitely appears functional would depend upon psychiatric evaluation and response to treatment of underlying emotional disturbance. A classic discussion of electropathology, by R. H. Jaffe, appears in the *Archives of Pathology* (5:837, 1928). There is a concise excellent discussion of electrical injuries by S. E. Barrera, in "Medical Physics" (vol. 1, edited by Otto Glasser and others, Chicago, Year Book Publishers, 1944, p. 741) and a fine presentation of neuropathology and cases by Leo Alexander in *Medical Clinics of North America* (22:663, 1938) and *Journal of Industrial Hygiene and Toxicology* (20:191. 1938).

EFFECT OF ACTINIC RAYS ON ENDOCRINE SYSTEM

TO THE EDITOR:—*A 45-year-old man developed acute myxedema. Prior to this he had been exposing himself to a sunlamp each evening for 10 to 15 minutes. He had been doing this for about three months. The lamp was placed in a position which exposed his face and neck only. A review of the literature for the past five years has failed to reveal any report of association between over-exposure to actinic rays and the development of acute hyperthyroidism or acute thyroiditis. Is there any relationship between these two, or would it be coincidental only?*

Ramon J. Spritzler, M.D., Beverly Hills, Calif.

ANSWER.—There have been many studies of the effects of visible and ultraviolet light on the endocrine systems of animals. Most of these have been concerned with changes in pigmentation in amphibia; plumage and sex cycle changes in birds; and in sexual cycles, antlers, etc. in mammals with seasonal breeding behavior. Even in birds and lower mammals, the evidence for the photoperiodic regulation of thyroid activity is not conclusive. In view of the widespread use of artificial ultraviolet light in dermatological therapy and in the home, it is probable that an effect on thyroid function would have been noted more frequently if it does, indeed, occur. On the basis of present knowledge, it is believed that the observed sequence of events in this patient is a chance coincidence and that the sunlamp exposures had nothing to do with the thyroid disease.

STEAM IN THE TREATMENT OF RESPIRATORY INFECTIONS

To the Editor:—*What are the indications and relative merits of cold and warm steam in the treatment of respiratory infections in infants and children?*

M.D., Michigan.

Answer.—The value of cold and warm steam in the treatment of respiratory infections in infants and children is dependent on the amount of water vapor in the air surrounding the patient. This amount is directly controlled by the temperature. Experienced observers feel that warm steam is more effective in the treatment of spasmodic croup (so-called old-fashioned croup) and acute laryngotracheobronchitis. However, in the presence of a high fever, the use of steam in small areas may add to the discomfort of the patient. The usual bronchitis, nasopharyngitis, and tracheitis seem to respond as well to cool steam. The type of moisture used is dependent somewhat on facilities available. The ideal, a steam room, which is usually only found in well-equipped children's hospitals, obviously has limited use in private practice. The emergency of spasmodic croup in the early hours of morning can readily be overcome by the use of a hot-water shower in the bathroom. Such steam is produced rapidly and in large amounts. For less urgent situations, the electric steam pot or generator combined with a sheet over the crib or bed is satisfactory. The mechanical electric producer of moisture is efficient and has the added advantage of operating without danger of steam burns.

ABSORPTION OF TOPICAL STEROIDS

To the Editor:—*Would the topical steroid preparations be absorbed in sufficient quantity to cause exacerbation or activation of a gastric ulcer?*

M.D., Illinois.

Answer.—Each steroid compound has to be evaluated individually to find out the readiness with which it is absorbed. In the state of our present knowledge, it is difficult to generalize about the amount that would be absorbed and whether a systemic effect would be produced and whether one of the complications might be favored. Certain biochemical changes may take place in the skin and in transit, and the rate of absorption may be so slow that a general effect is not possible. In general, cortisone is relatively ineffective, whereas hydrocortisone is definitely effective and thus might produce certain systemic effects, of which the risk of the aggravation or possibly the actual production of peptic ulcer should be considered. See Sulzberger and others (*J. A. M. A.* 151:468-472 [Feb. 7] 1953) for further observations.

EFFECT OF CREOSOTE VAPOR

To the Editor:—*A workman supervised the i stallation of about 50 creosote-covered pilings a river for the building of a bridge. He clain that this caused cancer of the larynx. Could th be possible?*

P. J. Imperato, M.D.; Brooklyn, N. Y.

Answer.—Creosote is not a chemical entit whether from wood or coal tar. The common cor mercial creosote is a mixture of phenolic bodi from coal tar. This creosote is credited with cance ogenic properties, perhaps exclusively limited the skin, although the lung has been mentione Lenson said, "This is particularly true of those tar distilleries, carpenters, railroad workers, farr ers, glass-furnace and steel-furnace attendants, ar engineers and truckers of diesel fuel oil." So f as known, all reported cases have involved creoso in intimate contact with the skin, such as in t handling of impregnated railway crossties or the hand painting of ship timbers. In the prese instance, it is impractical to believe that the me supervision of the installation of some 50 cre sote-treated pilings could have provided significa exposure. Although odors of creosote are persiste about treated wooden objects, creosote gives o little vapor, and no substantial air contaminatic is to be expected. The causation of any cancer the larynx may not be recognized as a prospec See Lenson's "Multiple Cutaneous Carcinoma Aft Creosote Exposure" in the *New England Journ of Medicine* (254:520, 1956). This article contai four references, and there are others. Apart fro cancer, dermatoses from creosote are far mor common. In such, photosensitivity may be a facto

USE OF MAGGOTS IN MEDICAL PRACTICE

To the Editor:—*What species of maggots is use if any, in the practice of medicine? What is th source of supply for this or any other species o maggots?*

Robert L. Atkinson, M.D., Bloomington, Ill.

Answer.—"For more than a century it was observed that fly maggots which infested the wound of persons injured in battle frequently cleaned out the tissue debris and fragments of shattered bones and allowed rapid healing of the lesions. Baer (1931) introduced fly larvas as a surgical aid in hospitalized cases of osteomyelitis. Because of the possibility that fly larvas from a contaminated breeding source might introduce tetanus or gas bacillus into tissues where they were used, larvas were then cultured under sterile conditions for surgical use. In addition to debridement, the maggots ingested and frequently killed the bacteria in the lesion, and by means of a secretion, allantoin, stimulated granulation and healing. The green-bottles Phaenicia (vel. Lucilia) caesar, P. sericata (L. sericata), and the black blow fly (Phormia regina) were most commonly utilized. Stewart (1934) called attention to the fact that these larvas will attack healthy as well as decaying or moribund tissue, and will even penetrate intact human skin. Since a wide variety of antibiotics have become available in recent years for treating osteomyelitis, the use of fly larvas has generally been abandoned." See Faust and Russell, "Craig and Faust's Clinical Parasitology" (ed. 6, Philadelphia, Lea & Febiger, 1957, p. 879).

PSORIASIS AND SURGERY

To the Editor:—*A patient has had psoriasis for about 10 years. She is to have abdominal surgery. Would an incision through the abdominal psoriasis be dangerous?*

D. D. Mosher, M.D., Seminole, Okla.

Answer.—Psoriasis is not a contraindication to a necessary intra-abdominal operation. The eruption may be aggravated by the stress of any major procedure, however. The incision may be made through a plaque of this disease, providing the area receives the same preoperative preparation accorded normal skin. It would be wise to remove the scales before surgery by vigorous brushing or scraping. While this may inflame the skin, it will remove mechanically many organisms that otherwise would be protected from antiseptics by the overlying scales. If there is no immediate necessity of subjecting the patient to the surgical procedure, temporary clearing of the eruption by local therapy, x-radiation, or 4-aminopteroylglutamic acid might be attempted. Cutaneous lesions may spread to the healing incision even if the surgical wound is inflicted in the grossly normal skin of a patient with psoriasis, due to the Koebner phenomenon.

DRYNESS OF THROAT IN SINGERS

To the Editor:—*A professional singer frequently is required to sing several hours daily in large auditoriums without the assistance of amplification. He has "dryness and a sense of fatigue" in his throat and believes that his voice would be unimpaired if these sensations could be eliminated. How can he be helped?*

M.D., California.

Answer.—There is no doubt that singing for several hours in a large auditorium without amplification subjects the entire vocal mechanism to a severe strain. However, in some operas, such as the Wagnerian cycle, the leading characters will sing for long periods, often having to project the voice over a heavy orchestral accompaniment. These artists, through proper breathing and vocalizing, avoid straining the voice, and they prevent undue fatigue by a general physical regimen in which the entire body is kept at maximum efficiency. The individual referred to in the question must avoid unnecessary use of the voice when not singing and must obtain sufficient rest and outdoor exercise. Dryness can, to a certain extent, be alleviated by the use of a steam vaporizer with a small amount of oil of eucalyptus in the water. Simple lozenges, such as butterscotch or fruit lozenges, afford temporary relief from dryness. Medicated lozenges should be avoided. Naturally, smoking and drinking must be avoided. It is also important that stress and tension be avoided since these factors can influence the normal coordination of the extrinsic laryngeal muscles.

FREQUENT SHAVING AND HAIR GROWTH

To the Editor:—*A nurse mentioned that she was never allowed to shave the neck of a woman ready for thyroidectomy for fear that hair would grow. Is this tradition a throwback to folklore? Are there any statistics that show whether or not shaving does affect hair growth?*

Robert R. Reilly, M.D., Landover Hills, Md.

Answer.—There is no truth in the belief that frequent shaving will stimulate the growth of hair. If this were true, the average young man would have been shaving his head closely for years in an attempt to retain his falling locks. This fact has been substantiated by several experimental studies. One of these investigators (Trotter, *Arch. Dermat. & Syph.* 7:93, 1923) performed numerous experiments in which she tested the effects of shaving the hair of various parts of the body in adults of both sexes. Careful measurements of the hair were made at the beginning of the study and at the end of the experiment. A comparison was made of symmetrical areas on the body, one area being shaved daily while the other was left untouched and used as a control. This type of protocol was employed over a period of several months, and the results showed that there were no differences whatsoever in the amount, length, diameter, or pigmentation of either the lanugo or terminal hairs present on either side.

EXCESSIVE PROTEIN INTAKE

To the Editor:—*Are there any possible harmful consequences in the daily eating of one cup of cooked egg whites over a long period of time (e. g., one year)?*

Zale A. Yanof, M.D., Toledo, Ohio.

Answer.—So far as this consultant is aware, no harmful consequences would accrue in the daily eating of one cup of cooked egg whites for a long period of time. Of course, there are many other sources of concentrated proteins of high biological value that would be equally of value. In particular, there is dried, defatted milk powder. The difference in biological values among egg whites, meat, fish, and chicken is very small. Proteins from eggs, meat, poultry, and fish are excellent, and over a period of time it would be essentially impossible to differentiate these proteins on the basis of nutritive value.

HUFNAGEL VALVE

To the Editor:—*A patient with rheumatic aortic insufficiency was treated with the use of a Hufnagel valve in the thoracic descending aorta. Considerable improvement in the patient's condition was obtained, but approximately 1½ years after placement of the valve he developed an idiopathic thrombocytopenic purpura which has persisted through the succeeding year to the present time. This thrombocytopenia can be reasonably well controlled with prednisolone in a maintenance dose varying from 5 to 10 mg. daily. Has thrombocytopenia been known to occur as a late complication of the Hufnagel valve? If so, what treatment is advised?*

D. L. England, M.D., Eugene, Ore.

Answer.—Thrombocytopenic purpura has not been known to occur as a late complication of the Hufnagel valve to date. Theoretically, it would be expected that any disturbance of blood elements would occur in the early postoperative stage, with the possible exception that a defective valve might possibly undergo fatigue of its plastic elements and disturbance of its surface at a later date. Several of these valves have been observed in dogs under Dr. Hufnagel's direction for seven or eight years with no such complication. No specific treatment would be advised other than the usual treatment for thrombocytopenic purpura.

SENSITIVITY TO INJECTABLE PENICILLIN

To the Editor:—*A patient who has had one attack of rheumatic fever is being given 1,200,000 units of an injectable penicillin once a month. He has had no evidence of rheumatic fever for the past six months; however, after each injection his temperature goes up to 102 F (39 C) for about 24 hours. What is the explanation for this phenomenon, and is it a common occurrence? No other patient receiving such injections has this problem.*

C. B. Rush., M.D., Timmonsville, S. C.

Answer.—The occurrence of fever of 24 hours duration following each injection of the particular penicillin product is doubtless a manifestation of sensitivity to the antibiotic. Such brief episodes of fever unaccompanied by other symptoms and following each injection of penicillin are unusual manifestations of hypersensitivity, but they do occur. In view of the patient's sensitivity to injected penicillin, prophylaxis of streptococcic infection may be attempted by daily oral administration of penicillin V. Should the patient also prove sensitive to this, another antibiotic will have to be used.

HODGKIN'S DISEASE

To the Editor:—*Please give information on indications for and availability of any antiserum or its equivalent for Hodgkin's disease.*

M.D., Maine.

Answer.—There is no antiserum or equivalent that has proved useful in the management of Hodgkin's disease. One can therefore not comment on its indications or availability. The conventional forms of treatment of Hodgkin's disease are x-ray therapy for local disease and nitrogen mustard or one of its related compounds for the systemic manifestations of Hodgkin's disease.

TREATMENT OF VITILIGO

To the Editor:—*A patient has a pea-sized whit patch, found four months ago, on the left side o the waist. After some days this white patch wa found to be increasing. Now it has increased u to 2 in. Pigmenting medicines have been use before exposure to sunlight and in the night be fore exposure to ultraviolet rays. The patient ha had a leukodermic patch about 2 in. above th loin on the back, first noticed in 1917. There is n family history of such disease or any other dis ease. Please suggest dermatological help in th matter.*

S. A. Patki, M.D., Poona, India.

Answer.—The results from treatment of vitilig or leukoderma are generally unsatisfactory. Treat ment with methoxypsoralen sometimes causes re pigmentation and sometimes not; topical use of thi drug usually is not recommended because of th severe bullous reaction that it is apt to produce The patches can frequently be masked satisfacto rily by painting them with a solution of potassiu permanganate in concentration to match the sur rounding skin.

GUIDANCE FOR THE "OVERSEXED" CHILD

To the Editor:—*How does one dampen the natural desires and impulses of a 13-year-old girl who has just started to menstruate and is "oversexed"? She has developed very rapidly during the past year and is very conscious of her development and of the opposite sex.*

M.D., New York.

Answer.—It would be well to have this girl studied psychologically as well as medically. Planning for her will be dependent upon her intellectual status and her general emotional state as well as her physical condition. The conditions in her home may have bearing upon her seeming lack of self-control. One cannot lessen her drives but perhaps can direct them into more constructive channels. In view of the many considerations that may have bearing upon her conduct, it would be desirable that she be seen at a child guidance center or children's psychiatric service; general planning of a program, possibly psychotherapy (assuming adequate intelligence, which cannot be taken for granted) may be indicated. The parents will probably need guidance in her care.

BALDNESS

To the Editor:—*A 26-year-old man, otherwise in excellent health, has been losing hair slowly but continuously for quite a few years. Even at this age, he looks a little bald. His father was quite bald too, but only when older. His mother and one older brother have thick, heavy hair. He has had occasional venereal exposures, but several serologic tests, including Kahn, are negative. The scalp is very clean. There are no signs of any fungus infection. The loss of hair is general, not the areata type. Please advise about diagnosis, further study, and treatment.*

Chen Chek-Ling, M.D.,
Nakon Pathom, Thailand.

Answer.—This man apparently has common male-pattern-type baldness, a condition that is not a completely understood and one for which there is no remedy—other than to choose one's ancestors with greater care. Apparently the baldness is not hampering his social life.

ANESTHESIA FOR SURGERY IN DIABETIC PATIENTS

To the Editor:—*What is the preferred anesthetic management for operations on the lower abdomen and lower extremities in patients with diabetes mellitus? Is there any contraindication to spinal anesthesia in such patients who may have subclinical neuropathy? Should regional anesthesia be avoided in a diabetic patient who has symptoms of peripheral neuropathy?*

M.D., New York.

Answer.—The experience and competence of the anesthetist are important factors. Spinal anesthesia is desirable in diabetic patients, especially if pulmonary complications are present or anticipated, and in cardiac patients if hypotension can be averted. It is the anesthesia of choice for operations upon the lower extremities. It is wiser to avoid regional anesthesia in patients who have symptoms of peripheral neuropathy because so frequently they develop infection and tissue necrosis.

ASYMMETRY OF DEEP REFLEXES

To the Editor:—*A 35-year-old mother of two children has an active left-patella tendon reflex, an absent right-patella tendon reflex, an active right-achilles tendon reflex, and an absent left-achilles tendon reflex. The only significant history obtainable was that the patient had been told that she had had "spinal meningitis" in infancy. What is a logical explanation for this?*

Warren Heller, M.D., Ogdensburg, N. Y.

Answer.—The asymmetry of the deep tendon reflexes in the lower extremities described in the question is probably of no clinical significance in the absence of any other neurological findings. Asymmetry of deep reflexes is found occasionally in normal individuals. Sometimes a seemingly absent reflex can be brought into some activity by utilizing techniques of reinforcement. It is possible however that the history of "spinal meningitis" is of significance, since this, either of itself or possibly representing really a diagnosis of nonparalytic poliomyelitis, might have produced this reflex disturbance persisting into adult life.

HYPNOSIS FOR PAIN

To the Editor:—*A 64-year-old man had pipe-smoker's cancer of the tongue in 1930, followed by extensive x-ray and radium treatment resulting in radium burn and scar tissue; he had a second recurrence in 1934 and a cancer cell extension in the nostril in 1953. He has had no extension since then but has had almost continuous neuralgic pain in the neck, face, and occipital region but strangely has not become habituated to codeine. He has been told that hypnotic treatments would relieve the pain. Please comment.*

Burton G. McGarry, M.D., Sarasota, Fla.

Answer.—If the patient will allow himself to be hypnotized, there is every likelihood his perception of pain can be reduced or completely suppressed. The hypnotic sessions would have to be frequently repeated, but, unfortunately, if this patient has not previously been hypnotized, it would likely be difficult to induce a trance in him at his present age.

CUTANEOUS IRON STAINS

To the Editor:—*A nurse gave a 14-year-old child an iron preparation subcutaneously in the right arm. She now shows a deep gray stain, 4 by 4 in. in size, on the skin of the upper outer arm. What can be done to remove an iron stain from the skin, other than excision and skin grafting or possibly tattooing?*

J. Dudley Youman Jr., M.D., Shreveport, La.

Answer.—As a rule, iron stains disappear from the skin in time, though it may take quite a while. The better course, in this case, rather than to use sources of concentrated proteins of high biological value that would be equally of value. In particular, there is dried, defatted milk powder. The difference in biological values among egg whites, meat, fish, and chicken is very small. Proteins from eggs, meat, poultry, and fish are excellent, and over a period of time it would be essentially impossible to differentiate these proteins on the basis of nutritive value.

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WASHINGTON NEWS

FROM THE WASHINGTON OFFICE OF THE AMERICAN MEDICAL ASSOCIATION

Appropriations Increased for Institutes of Health . .

Hospitals Are Included in New Public Works Measure . .

Expanded Research Urged on Air Pollution by Autos . .

HOUSE COMMITTEE BOOSTS FUNDS FOR INSTITUTES OF HEALTH

The House Appropriations Committee, reporting on a funds bill for the next fiscal year, has increased the budget for the Department of Health, Education, and Welfare by about 6% over the Budget Bureau's recommendation, with almost all of the increase going to the National Institutes of Health, the research arm of Public Health Service.

At the same time the committee criticized the administration for making budget requests that were "unrealistically" low in view of what the committee regards as the needs of the nation for work in medical programs, particularly research.

The budget must still pass the House, where few changes are anticipated. The Senate in recent years has tended to increase funds for medical and welfare activities. As finally compromised, the appropriations generally are higher than the totals voted by the House.

Here are some of the more important totals in the bill as voted out by the House committee:

Total amount for the Department of Health, Education, and Welfare, $2,565,080,581, as compared with $2,550,724,581 recommended by the Budget Bureau and $2,732,914,381 HEW is spending the current year.

Total amount for the National Institutes of Health, $253,083,000, as compared with $241,183,000 proposed by the Bureau (the same as this year's appropriations).

Total amount for Public Health Service, $578,696,000, as compared with $566,689,000 recommended by the Bureau and $562,750,000 PHS is spending the current year.

Largest single increase for the institutes was $2,700,000 more for the Mental Health Institute, raising its figure from the bureau's requested $37,698,000 to $40,398,000. Also, the committee wrote into the bill $3,700,000 for construction of a building to house the Dental Research Institute. This item was not in the President's budget.

As expected, the committee voted $121,200,000 or the Hill-Burton hospital construction program, he total the administration had requested after rst proposing only 75 million dollars. Commenting n this, the committee said: "It is difficult . . . to etermine whether the primary reason for the commended reduction was simply to conform ith some high budget policy or the belief that the program had accomplished its purpose to the point where a reduction would be in keeping with the original objectives. . . . There is little doubt that the revised estimate of $121,200,000 more nearly conforms with the public opinion on this subject than did the original request of 75 million dollars."

The committee approved $9,300,000 for the Food and Drug Administration, after lopping off $110,000 that the FDA had requested for its civil defense activities. At the same time the committee censured FDA for not going ahead with an improvement program that had been recommended two years ago by an advisory committee. "The committee is at a loss to understand why these recommendations have been discarded."

Also scored by the committee was the Public Health Service's handling of the Indian health program. It cited "fumbling around" on the construction of one hospital, funds for which were authorized more than two years ago. "The committee will expect the surgeon general to take a personal interest in correcting the administrative shortcomings and in seeing to it that the Indian health services are better integrated into the Public Health Service generally," the report said.

On research, the committee said it could not accept as "being even near to adequate" the budget submitted by the administration for the Institutes of Health. In addition to increasing NIH funds, the committee also rejected an administration proposal that up to 25% of a grant be set aside as "overhead expenses" for the institution doing the research. This action made an additional $6,700,000 available for direct grants.

In voting the Mental Health Institute an additional $2,700,000, the committee complained that the institute's training program is lagging. It earmarked $700,000 specifically for training. "Action to produce the required group of trained people—psychiatrists, psychiatrically trained physicians, sociologists, psychologists, and psychiatric nurses—is inadequate. The committee has seen little evidence of the kind of bold thinking and action that will be necessary to meet the personnel shortages. As one specific approach, the committee wishes part of the increase to be devoted to a more vigorous pilot project for providing basic psychiatric instruction to physicians."

COMMITTEE RECOMMENDATIONS FOR HEALTH EXPENDITURES

Following are recommendations of the House Appropriations Committee for budgets for various health and welfare activities in the Department of Health, Education, and Welfare for the fiscal year starting July 1. The House still must pass on the figures, after which the bill goes on to the Senate. The left column indicates money being spent in

(Continued on next page)

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Lown, B., and Levine, S. A.:
Current Concepts in Digitalis Therapy, Boston,
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the current fiscal year, the center column what the Budget Bureau recommended, and the right column the committee's proposals.

Activity	Current Spending	Budget Bureau Recommendations	Committee Recommendations
Food and Drug Administration.	$ 9,300,000	$ 9,410,000	$ 9,300,00
Freedmen's Hospital	3,000,000	2,975,000	2,975,00
Howard University	4,212,000	4,334,000	4,180,00
Vocational education	33,750,081	33,750,081	33,750,081
Vocational rehabilitation	52,230,000	56,800,000	56,800,00
Venereal diseases	4,415,000	4,400,000	4,400,00
Aid to states (gen'l)	22,592,000	22,889,000	22,000,00
Tuberculosis	7,000,000	5,386,000	5,386,00
Communicable diseases	7,050,000	6,200,000	6,200,00
Sanitary engineering	12,640,000	12,815,000	12,725,00
Waste treatment works	45,000,000	45,000,000	45,000,00
Hill-Burton program	121,200,000	121,200,000	121,200,00
Hospitals, medical care	44,399,000	44,309,000	44,730,00
Foreign quarantine	3,876,000	3,983,000	3,983,00
Indian health activities	40,100,000	40,225,000	40,225,00
National Institutes of Health			
General research & service	14,026,000	17,742,000	17,742,00
Cancer	56,402,000	55,923,000	57,423,00
Mental health	39,217,000	37,697,000	40,397,000
Heart	35,936,000	34,712,000	36,212,00
Dental Health	6,430,000	6,293,000	6,543,00
Arthritis and metabolic diseases	20,385,000	20,592,000	21,092,000
Allergy and infectious diseases	17,400,000	17,497,000	17,997,000
National Library of Medicine	1,450,000	1,415,000	1,415,000
St. Elizabeth's Hospital	3,320,800	3,366,000	3,366,000
Maternal & child welfare	41,500,000	41,500,000	42,500,000

TESTIMONY HEARD ON PUBLIC WORKS BILL

The Senate Banking and Currency Committe has been receiving a variety of advice on the Democratic-sponsored antirecession bill for a 2 billion dollar public works loan program. It provides for 50-year loans at 3% to states and local governments for building a wide range of public projects, including hospitals, rehabilitation and health centers, and public medical schools. The program would be handled by the Community Facilities Administration.

The American Hospital Association urged the committee to amend the bill so that loans also could be made to private hospitals for renovation and modernization. The AHA would not permit new construction under the bill, and any addition of beds would first have to be cleared with the state Hill-Burton authorities. The AHA also proposed that the interest be eliminated except for ¼ of 1% for administration of loans.

An official of the American Municipal Association, which represents nearly 13,000 cities, proposed more sweeping changes. The organization suggested that Hill-Burton funds for hospital construction be increased for the next two years to 1 billion dollars. It was maintained that recent studies had shown that three times the present volume of spending must be undertaken for the next 10 years "in order to eliminate all present shortages and keep up with new population growth and obsolescence."

The municipal group also called for a trebling of federal grants for building sewage treatment works. The present authorization is for 50 million dollars a year.

The AFL-CIO also endorsed the measure, which is sponsored by 13 Democrats and two Republicans. The union felt the bill would not have any appreciable affect on the economy until next year, so far as jobs are concerned, and that it should be coupled with other antirecession steps. These should include, the labor spokesmen said, improved benefits under social security, extended coverage of the Fair Labor Standards Act, higher unemployment benefits and extended duration, and increased exemptions under the income tax by at least $100 per dependent.

AIR POLLUTION HAZARDS BEING INVESTIGATED

A Public Health Service authority on air pollution has informed the House traffic safety subcommittee that expanded research will be needed for any determination of the possible effects of auto exhausts on community air pollution and the health of man. Before the subcommittee is a bill for setting standards and controlling the amount of unburned hydrocarbons in motor vehicle exhaust.

Dr. Wilton M. Fisher, chief of the air pollution medical program of PHS, proposed laboratory exposures of selected species of animals for prolonged periods and epidemiological studies of current hazards to human health from lead discharged from autos using tetraethyl of lead in their fuel.

Dr. Fisher said that in regard to auto exhausts, "we know of no scientific data that have shown that the automotive exhaust specifically is or is not responsible for part of this increase of lung cancer frequency. Although we strongly suspect the relationship between air pollution and lung cancer, we do not now know that air pollution considered in its entirety, of which auto exhausts provide only one part, is in fact related to the increase of lung cancer frequency."

AERO MEDICAL ASSOCIATION ASKS CHANGES IN CAA

The Aero Medical Association, formed 10 years ago to promote passenger and pilot safety and scientific advances in aviation medicine, has called on the Civil Aeronautics Administration to revamp and strengthen its medical program.

Its resolution describes CAA's medical department as "grossly inadequate" to perform its functions, including education, supervision, and research. It asks that the department "be provided with an adequate budget to carry out its various functions in the areas of periodic examination of fliers; the selection, training, and supervision of examiners; research in the noncompetitive areas of civil aviation medicine; the examination of accidents, including the pathology of the deceased in fatal accidents; and such other functions as the medical director (of CAA) may find necessary."

The resolution proposes that a "completely adequate and competent medical department be established in the CAA, directly responsible to the administrator." At present, the resolution says, the position of the CAA medical department "is not in keeping with the importance of its responsibilities and renders its operation ineffective." A similar resolution was adopted last June at the American Medical Association's meeting.

At three days of lectures and panel sessions, delegates heard discussions on such subjects as wide range acceleration, protection at extreme altitude, accidents and flight safety, space medicine, human factors in low level flight, hyperoxia and hypoxia, decelerative and ejection forces, aviation physiology, and sensory problems.

At the session Brig. Gen. M. S. White, U. S. Air Force, moved up from president-elect to president of the association. Dr. Ludwig G. Lederer of Washington, D. C., will succeed him next year. Elected as first vice-president, and in line to become president in 1960, was Dr. George J. Kidera of Chicago.

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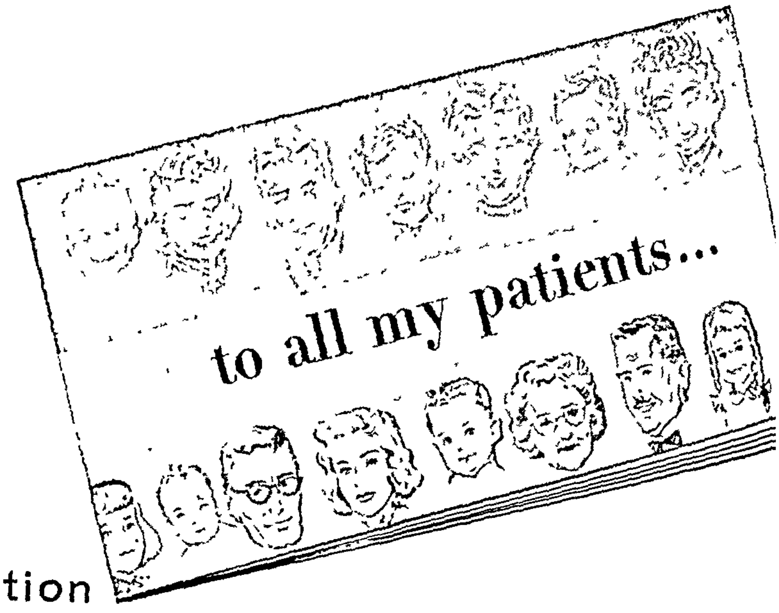
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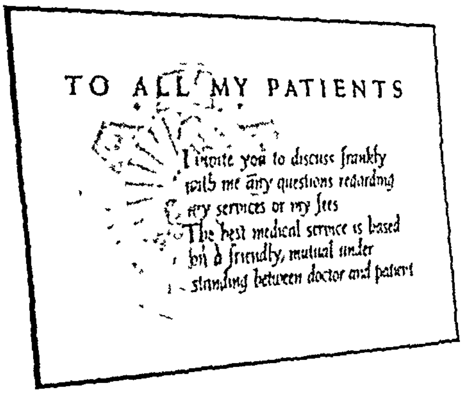

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IONIZING RADIATION AND A SENSE OF PROPORTION

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Common sense demands that the practitioner view the current lay and scientific alarm about the harmful effects of ionizing radiation with a sense of proportion. There is no reason for the practitioner to feel uneasy about radiation when it is being used with conservative judgment and skill. Proper perspective in an area where much clarification is needed is presented to the practitioner with no background in radiation biology or physics. Practitioners with radiation equipment must sooner or later take cognizance of the standards suggested in Handbook 60 of the NCRP. These standards are applicable to all radiation installations, not only to that of the radiologist.

The potentially harmful effects of ionizing radiation from medical sources are of importance to all practitioners of clinical medicine. The internist who does chest fluoroscopic examinations routinely, the general practitioner with a small x-ray unit in his office, the obstetrician who makes use of x-ray pelvimetry, the urologist and other surgical specialists using x-ray equipment, the dermatologist treating benign lesions, and, in brief, all physicians who make use of x-ray are vitally concerned with the possibility of harm from the use of ionizing radiation.

This paper is addressed to the practitioner with no background in radiation biology or physics in the hope that, on the basis of the facts presented, he can obtain the proper perspective in an area where much clarification is needed.

A questioning attitude on the part of many patients regarding exposure to radiation is now present. The physician, on whom the patient's ultimate faith rests, must be able to deal wisely and honestly with this problem. He must possess the proper perspective and sense of proportion regarding the use of ionizing radiation, as well as the essential facts about radiation hazards.

Those facts on which there is generalized agreement will be presented, as well as the areas of disagreement. Many of the physicians' questions about radiation are not answerable in terms of black and white. No one can give magic figures in reference to patient radiation dosage and can say that this patient has reached the limit of exposure and that another patient is entitled to three more gastrointestinal series in his lifetime. But, on the basis of our present knowledge, broad general principles can be outlined and a basic philosophy toward radiation can be developed.

Radiation and Medical Ecology

Physicians have become concerned with medical x-ray exposure because all radiation exposure is now under scrutiny. Since the advent of the nuclear age, the amount of radiation to which man is exposed

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has been increasing. Nuclear technology is still in its infancy, but it is anticipated that in a decade tremendous developments will have occurred. A major problem will be that of controlling the radiation dosage to whole populations. This is in essence a problem of medical ecology: the relationship of man to the artificial environment which his industrial civilization has produced.

There are many problems of medical ecology which are the result of industrialization. Pollution of air and bodies of water in industrial areas is of great importance, to mention one example. The control of radiation, however, differs from that of all other noxious agents in that man is not equipped by nature to detect this potential peril to his existence. A serious danger has been produced, both for man the individual and for all mankind, for which there is no sensory warning. Only the proper instruments, properly placed and tended, are useful in warning of the danger.

The recent highly publicized reports of the National Research Council entitled "The Biological Effects of Atomic Radiation" and a similar report of the British Medical Research Council, "The Hazards to Man of Nuclear and Allied Radiation,"[1] are essentially monographs in the field of medical ecology. This point, however, was missed in the highly sensationalized publicity which followed publication of these reports.

A continuing study of the effect of radiation on man is being carried out by the National Research Council, the United States Public Health Service, and a special committee of the United Nations. It is in the light of medical ecology that much of the news of radiation effects should be viewed. We must learn to live with radiation in the nuclear age, both in a physical and in an emotional sense.

National Committee on Radiation Protection

The danger of ionizing radiation has been under close scrutiny for 30 years by well-organized bodies of scientists. The fact that the hazards are not limited to national boundaries was recognized in 1926 by the action of the first International Congress of Radiology, which established the International Committee on Roentgen Units and Protection.[2]

Shortly after this, the medical radiologists of the United States organized a similar committee with its activities centered at the National Bureau of Standards in Washington, D. C.[3] Dr. Lauriston S. Taylor, an eminent radiation physicist of the bureau, has been chairman of the National Committee on Radiation Protection (NCRP) since its inception. It should be emphasized that this is not a governmental commission but is composed of representatives from private medical, scientific, and industrial fields, plus those from the federal services. It established the foundation for protection of occupational personnel in radiology through its suggested standards.[4] Its recommendations protected the workers in the development of the atomic bomb during the Manhattan District Project.

The philosophy underlying the protective measures it has outlined is based on a full utilization of all available knowledge concerning radiation effects on man. It has suggested standards which are fully protective and yet practical in their application. The importance of this committee to organized medicine and to the individual practitioner cannot be overstressed. In today's emotionally charged atmosphere in matters concerning radiation, this committee, which includes representatives from the American Medical Association, the United States Public Health Service, and the founding radiologic organizations, is the recognized authority on radiation protection. It is sympathetic to the problems of the medical profession, and it understands these problems.

Radiation Effects on Man

What, then, are the deleterious effects of radiation with which the practitioner should be concerned? They may be divided into two broad categories: (1) the genetic effects, which depend on the exposure of the gonadal tissues, and (2) the somatic effects, which depend on the exposure of other body tissue. The first is primarily of long-range concern to the race; the second is of immediate concern to the individual.

Genetic Effects.—The result of irradiation of germinal tissues is an alteration of the hereditary material contained in the nuclear chromosomes, the genes. The significant facts to be considered are as follows: (1) All geneticists agree that there is no threshold for this effect, i. e., that even the most minute dose of radiation does some damage to the genes. (2) Once damage is done, it is irreparable. In view of this, the genetic damaging effects of radiation are cumulative over the years. (3) The result of this genetic damage is to produce deviations from the norm in the offspring of the irradiated individual. These deviations are almost always undesirable. They are referred to as mutations and the resultant offspring as mutants.[1]

The mutants which have been observed to result from x-ray exposure of many different types of organisms are characterized, in general, by decreased longevity, increased susceptibility to disease, and decreased fertility. The mutant genes are usually recessive, or masked, so that the first generation offspring do not bear the full brunt of the genetic damage. Thus, contrary to public opinion, freaks and monstrosities do not often occur in the first generation following irradiation of the mother. The full expression of the damage comes in subsequent generations when there is a mating of similarly damaged genes. Partial expression of the undesirable characteristics of the damaged gene occurs prior to this and may be of so subtle a character that detection is extremely difficult.[5]

It should be emphasized at this point that the mutations produced by radiation are in no way different from mutations which have always been occurring in the human race. There is a certain level of the mutation rate which is known to be "normal" for the human species.[5b] The concern of geneticists is that this level not be increased significantly. It has been estimated that a gonadal dose of 30 to 60 r to each individual of an entire population would result in a doubling of this normal mutation rate. It is the fear of geneticists that such an eventuality might well be disastrous for the perpetuation of the race. On the basis of the above figures, which are the result of animal experimentation, the geneticists of the National Research Council have estimated that in order to provide for a wide safety margin the average gonadal dose for large populations should not exceed 10 r.[1a]

This latter statement should be read with special care by practitioners of medicine in order to avoid missing a point which has been widely misunderstood. Geneticists are interested in total population doses, i. e., N-million roentgens per M-million individuals in the reproductive age. The statements concerning gonadal dose should thus be interpreted from the viewpoint of total reproductive population dose and not primarily of dose to the single individual regardless of age. This does not mean, of course, that the dosage to the individual can be ignored. However, if we remember that the work of the geneticist represents a portion of the ecologic study to enable mankind to live safely with radiation from all sources in the future, a perspective can be obtained which is of much practical significance to the practitioner. As physicians, we are concerned with keeping the medical radiation dosage as low as possible, but our primary concern is the welfare of the patient before us. The health of future generations is based on the maintenance of the health of the present generation.

It has been estimated that, of the 14.3 r average gonadal dose said to be allowable during the first 30 years of life, about 4.3 r comes from natural radioactive background sources. This, man has always lived with. Fallout from nuclear bomb explosions at the present rate accounts for about 0.1 r.[1a] An estimate of 4.6 r from medical-dental sources has been presented.[6] This then leaves us with a "margin" of several roentgens. Some of this will be used up in the future in exposure to industrial operations.

The lay press has presented this as a critical situation. Those who have worked with radiation hazards for many years do not feel this sense of emergency.[7]

Regardless of the accuracy of the magnitude of the above figures (and it must be emphasized that these are estimates for planning purposes, not figures with true scientific accuracy), the practical viewpoint for the practitioner to take is that radiation of all types should not be used unnecessarily. Clear medical indications should govern its use at all times. There should be a conception on the part of those actually administering radiation of the approximate number of roentgens for a given examination and the best methods for protecting the gonadal tissues for each examination.

The crux of the present problem, as it relates to medical practice, is the dissemination and utilization of already existing knowledge in the area of radiation safety.

Somatic Effects.—Radiation effects other than genetic are also of importance in relation to radiation environment. These nongonadal or somatic effects are considered by many workers to be of more immediate import than the genetic effects. The apparent increase in the incidence of leukemia has been thought by some authorities to be due, in part, to the increased use of ionizing radiation in the last half century.[8] The demonstration that roentgen therapy for such benign conditions as ankylosing spondylitis in adults and so-called thymic enlargement in infants has in later years resulted in an apparent increased incidence in neoplasia in these irradiated groups is a good cause for a reappraisal of radiation therapy for all benign conditions.[9]

It is presumed that the development of neoplasia following irradiation is due to damage of the chromosomes within the susceptible somatic tissues so that when the injured cells multiply they form damaged cells, or mutants. Over a long period of time the mutant cells may obtain superiority over the normal cells in susceptible individuals.[10]

The life-shortening effect of radiation has been demonstrated on animals who have received whole body radiation.[11] This, however, has not yet been shown for very low dosage in the order of magnitude of the background radiation nor has an effect on longevity for limited body irradiation been shown. Decreased longevity of radiologists has been reported by some observers and denied by others.[12] In analyzing these deaths, it must be remembered that the older radiologists were exposed to what we, today, would regard a dangerous level of radiation in the course of normal occupational exposure.[13]

There is still much to be learned about radiation effects in the very low dosage ranges. Whether a threshold exists for permanent radiation damage to the somatic cells is still undetermined.[14] The restorative powers of the body tissues are tremendous, as is well known to those in active medical practice. The uncertainty of extrapolating results obtained from animal experimentation to human beings must also be considered.

Use of Radiation

The points in the foregoing of practicality for physicians follow. First, it must be recognized that low-dosage radiation can possibly damage cells, at least in certain individuals, irretrievably. It is most important that radiation be confined to the smallest possible portion of the body in all examinations and that whole body irradiation (as can occur in an improperly performed diagnostic examination) be avoided at all costs. Second, reappraisal should be made of all "routine" diagnostic examinations or reexaminations. Third, the use of radioisotopes should be carefully appraised because of the intimate contact of the radiation emitter with the body cells. Fourth, radiation procedures in children and pregnant women should be done with special care. This applies particularly to fluoroscopic examinations. Fifth, all radiation therapy for benign conditions should be carefully reappraised. The use of radiation in conditions where effective substitutes are available can no longer be considered as conservative medical practice.

Maximum Permissible Dosage.—The setting of numerical values for permissible dose of radiation is a complex problem requiring the talents of physicists, radiation biologists, and radiologists.[15] It involves not only scientific but also philosophical consideration. The possible harm that can accrue from radiation must be balanced against its benefits. A wide margin of safety must be provided in setting up standard values of exposure for persons who knowingly and willingly expose themselves to radiation by virtue of occupation. Ethics and morality are factors in the setting of permissible dosage standards for persons who may unknowingly become exposed to radiation in the vicinity of radiation generators or emitters. An even wider safety margin must thus be provided for those individuals.

Physicians have a deep awareness of the application of philosophical principles simultaneously with scientific. Good medicine is both science and art because of this.

On the basis of the previous discussion of radiation effects, it may seem incongruous to speak of a "permissible dose" of radiation. The underlying philosophy for such a concept is the recognition of the harmful nature of radiation, but physicians must be willing to assume certain risks in its use because of its great value. It is a matter of recognizing the possibility of radiation damage while assigning such a wide margin of safety to the allowable exposure that the probability of injury on the basis of our existing knowledge is not great. The concept of permissible dosage is an attempt to strike a hard bargain with radiation.

The initial maximum permissible dose for radiation workers was set at 0.1 r per day in 1934. In 1948, the NCRP, on the basis of newer knowledge, reduced this to 0.3 r per week. Genetic effects then became a factor, and, in 1956, not only was the dose reduced downward but a formula was established to give maximum protection to the exposed population in the reproductive age group.[16]

It should be pointed out that the steady downward revision of the permissible dosage through the years has been accomplished without evidence of discernible injury to individuals under any of these standards.[17] As knowledge of radiation effects has increased, there has always been a corresponding sensitivity of the NCRP to the possibility of harm and a desire to provide as wide a margin of safety as is practicable.

The practitioner has a practical consideration in the above discussion. If he is exposed in any degree to radiation, he should insure himself that the degree of his exposure is within the maximum permissible level. It is his ethical responsibility, also, to see that exposure of employed personnel under his supervision to radiation is within this range. This can be easily and inexpensively done, without any knowledge of the subject, by means of the radiation film badge. This is simply a small badge containing a film of a special type which is worn by the exposed individual at all times when near radiation sources. The film badge service can be secured from a number of commercial concerns. A permanent record of radiation exposure is sent periodically to the physician, and a record is kept in the central file of the concern. This represents a most inexpensive form of insurance against radiation injury for the practitioner and for his employees.

Medicolegal Considerations

Any practitioner who does fluoroscopic or radiographic examinations has, without realizing it, passed imperceptibly into a period of tremendously increased liability due to radiation damage. It does not require a great deal of imagination to foresee the types of malpractice suits that might occur in the future. There will undoubtedly be tests concerning the physician's liability in presumed cases of miscarriage, stillbirth, congenital deformity, or neoplasia linked to relatively low dosage radiation.

The lack of knowledge on the part of the physician relative to radiation hazards will place him in a rather precarious position on the witness stand. Failure to have had radiation equipment surveyed by a qualified physicist, lack of knowledge of dosage factors, and failure to use standard measures of protection will leave him extremely vulnerable for damage claims. Association between radiation and the alleged injury may be on flimsy grounds, but to a jury of laymen impressed by a recital of radiation effects the confession by the practitioner of ignorance of the accepted standards of protection will not go well.

The standards suggested in Handbook 60 of the NCRP [4] have been used in previous years in court testimony. They are applicable to all radiation installations, not only to that of the radiologist. It is these standards which are now being used as the foundation for legislative codes regulating radiation in various states.[18] Practitioners with radiation equipment must sooner or later take cognizance of these standards.

As legislation concerning the regulation of radiation exposure becomes more prevalent, the physician will be brought increasingly into contact with areas wherein the possibility of legal suits may occur. If he is to continue the personal use of radiation equipment, he must begin to seek knowledge concerning the use of all recognized safety procedures. The philosophy of licensing radioactive materials by the Atomic Energy Commission has been used since the dissemination of these materials to the medical profession. Unless there is rigorous self-policing by the profession, public pressure may well be generated to a sufficient degree that licensing radiation equipment of all types will be required.

Personal Registration of Radiation Exposure.—The feasibility of keeping a permanent record of the amount of radiation that each person receives has recently been under study.[19] Several systems have been proposed, but each has its own weaknesses and drawbacks.

The basic difficulty is that there is not yet a simple, accurate, and practical method for obtaining a dose to the gonads of both sexes which can be used under all clinical conditions. Without accurate input data, any system of radiation exposure recording is meaningless.

Once methods of securing adequate data are developed, problems concerning the actual recording of the dosage must then be met. The use of personal radiation cards to be carried by the patient is not desirable from the medical viewpoint. It is not only bad psychologically, but the difficulty of patients keeping medical records of any kind is a familiar one to the profession. Further, the use of a central registry for such record keeping would involve considerable administrative difficulties which might well hamper medical practice.

A review of this problem by the International Commission on Radiological Protection and the International Commission on Radiological Units and Measurements for the United Nations Scientific Committee on the Effects of Atomic Radiation declares that, at least for the present, any effort in this direction would be more profitably expended in studying samples of the population to determine gross rates of exposure to radiation and in making estimates of gonadal dose from this.[19]

A Sense of Proportion

Common sense demands that the practitioner view the current lay and scientific alarm about the harmful effects of ionizing radiation with a sense of proportion. The opinion of eminent geneticists and radiation biologists must be respected, but, as physicians, we must place these opinions in their proper context. The hazards of radiation must be regarded with the same cool sense of emotional detachment with which other hazardous procedures in medicine are regarded. The possibility of causing damage to future generations cannot be allowed to interfere with the legitimate use of radiation by medicine as long as a substitute modality is unavailable. There is no reason for the practitioner to feel uneasy about radiation when it is being used with conservative judgment and skill.

The pronouncements of laboratory investigators must be accepted as important contributions to the basic science background of the physician and must be viewed in that perspective. The exercise of judgment concerning the use of hazardous procedures on human beings is a prerequisite in the medical profession. It calls for an evaluation of the degree of danger of the hazard versus the net gain to the patient. Neither the layman nor the nonmedical scientist can make this judgment. This fact must be recognized by scientists outside of the medical field, and it must be made clear to the lay public. The primary need is for education, not for alarm. With an increased dissemination of knowledge concerning radiation, those to whom this subject is relatively new will learn, as those of us who work with radiation have learned, to respect and not to fear it.

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ELECTROCARDIOGRAM AND ELECTROENCEPHALOGRAM IN ELECTIVE CARDIAC ARREST

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and
Capt. Patrick P. Moraca (MC), U. S. Army

The information afforded by continuous electrocardiographic and electroencephalographic monitoring is especially valuable during cardiac surgery. An abnormality seen in the electroencephalogram represents a summation of many influences affecting the brain and is not specific, but it tells when something is occurring that should be investigated. The promptness with which such changes follow a circulatory disturbance is illustrated by seven records made during operations in which the heart was arrested by injections of potassium citrate. The electrocardiogram showed the disorganization, cessation, and later resumption of cardiac activity; the electroencephalogram reflected the level of anesthesia, the effect of temperature changes, the state of the cerebral circulation, and the adequacy of respiration. These means help to maintain the necessary close rapport between the anesthetist and the essential physiological functions of the patient.

Safety during anesthesia demands close rapport between the anesthetist and the essential physiological functions of the patient. The development and use of detailed signs of anesthesia have helped to establish this rapport. These signs, including respiration, pulse, blood pressure, motility of the eyeball, and size of the pupil, are useful in determining the depth and, therefore, the safety of anesthesia. These signs of anesthesia must be considered as aids only, and assessment of the status of the patient necessitates a thoughtful consideration of all of them. Anesthesia, in many of its present applications, modifies or arrests some of the physiological functions so that they are useless as signs of anesthesia.

Various instruments of precision, such as those which record intra-arterial blood pressure and blood or alveolar oxygen and carbon dioxide tension, and the electrocardiogram and electroencephalogram, have been employed to assist in determining the condition of the patient during the stresses of surgery and anesthesia. Of these, the electrocardiogram and the electroencephalogram may prove to be most useful.

Electrocardiogram

An electrocardiogram is most helpful in patients with already existing heart disease, whether or not the heart is the site of the surgical procedure.

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It affords immediate evidence of cardiac arrythmias, the most serious of which are those resulting from high vagal tone or ventricular irritability. High vagal tone is the cause of nodal rhythm, atrioventricular dissociation, Wenckebach's period, sinus bradycardia, and ventricular asystole. Ventricular irritability may produce premature ventricular contractions (especially significant is the multifocal premature ventricular contraction in which the configuration of the complex varies from beat to beat), ventricular tachycardia, and ventricular fibrillation. The latter two may result from a compromise of coronary circulation during surgery (such as the inadvertent placing of a suture around or too near a coronary orifice). The intravenous injection of procaine, the interruption of surgical manipulation of the heart, or relief from a sharply jackknifed position may correct ventricular tachycardia.

Anoxia, especially in the diseased heart, may cause depression at the S-T deflection in the electrocardiogram. There are, however, no changes in conduction. T-wave changes are seen not in acute but only in chronic anoxia. S-T elevation (or depression in subendocardial infarcts) occurs immediately with coronary occlusion, but Q-R-S changes (significant of necrosis) occur only after an interval of several hours. During elective cardiac arrest. the electrocardiogram shows only a flat horizontal tracing.

Electroencephalogram

The electroencephalograph registers or records the electrical waves which are produced by the brain. The energy output of the brain is revealed by the amplitude and frequency of the tracing and is seen to decrease with deeper anesthesia, hypoxia, hypotension, hypothermia, and hypercapnia. The electroencephalogram summates these effects without clearly indicating which is responsible for the deviation from normal. The changes which are seen during surgery and anesthesia are not, therefore, specific but indicate the necessity for careful evaluation of pulmonary ventilation, blood pressure, and the like. In this respect, abnormalities of the electroencephalogram are somewhat similar to those of blood pressure—the changes indicate only that something is occurring which should be investigated. The appearance of hypertension, for example, may be the result of some such factor as mild hypoxia, hypercapnia, or a painful stimulus during light anesthesia. The changes in the encephalogram resulting from anesthesia with various agents and from anoxia, hypercapnia, hypotension, and hypothermia have been the subjects of many investigations in the past few years.

Gibbs, Gibbs, and Lennox, in 1937,[1] made electroencephalograms of patients under ether anesthesia. They found that, as the depth of anesthesia was increased, there was an increase in the amplitude of frequencies at 20 cps and that later high-voltage waves with a frequency of 5 cps appeared; in anesthesia for surgery, waves of 1 cps, on which were superimposed small waves with 10 to 20 cps. frequency, appeared. They concluded, "A practical application of these observations might be the use of the electroencephalogram as a measure of depth of anesthesia during surgical operation. The anesthetist and surgeon could have before them on tape or screen, a continuous record of the electrical activity of both heart and brain."

The electroencephalogram during ether anesthesia was further studied by Courtin, Bickford, and Faulconer.[2] They recognized seven electroencephalographic levels of anesthesia, which they described, respectively, as flat, rhythmical, complex, slight suppression, moderate suppression, severe suppression, and complete suppression. They found that the great variations between the electroencephalographic patterns of waking patients disappeared even under light anesthesia and that the characteristic tracings for the different levels were reasonably constant from patient to patient. The patterns for ether anesthesia as described by Clowes and others [3] were somewhat similar.

Bellville and Artusio [4] studied the electroencephalograms of patients in the various planes of stage-1 (analgesia) ether anesthesia. Plane 3 of this stage produced a characteristic electroencephalogram. The amplitude was 30-40 μv, the rhythm was sinusoidal, and the frequency was 20-24 cps. Deepening of the anesthesia was followed by the appearance of waves of slower frequencies with a superimposed wave of fast frequency and finally by the disappearance of the fast-frequency wave with a predominance of the slow-frequency waves. The predominant frequency in the stage of analgesia, i. e., plane 3 of stage 1, is 22 cps. The average peak activity is 17 μv (12.5-22 μv).

Nitrous oxide anesthesia was found to give the same electroencephalographic pattern as the lighter stages of ether anesthesia.[4] Six electroencephalogram stages of cyclopropane anesthesia were recorded by Rubin and Freeman.[5] Cyclopropane anesthesia, as shown by the electroencephalogram, was divided into five stages by Possati and others.[6] A close correlation between stages of anesthesia and concentrations of cyclopropane in the blood was found. The effect of thiopental (Pentothal) sodium, given in a dose of 400 mg. prior to intubation, produced extensive changes in the electroencephalogram.[7] High amplitude waves of 1 to 2 cps appeared for a period of one-half to one minute, followed by disappearance of the rhythm. Later the pattern showed waves of 2 to 3 cps alternating with zones of extinction, each having a duration of 5 to 10 seconds. These abnormalities lasted from one and one-half to eight minutes and were not found with slow injection of thiopental.

Courtin [8] described the electroencephalographic levels of anesthesia with nitrous oxide and trichlorethylene and found them strikingly similar to levels

1, 2 and 3 of anesthesia with nitrous oxide and ether.[7] Level 1 with waves of fast frequencies was characterized by an increase in frequency and a decrease in amplitude from the normal tracing. Level 2 (rhythmical) showed an amplitude of 1 to 200 μv with a predominant frequency of 3 to 5 cps. Level 3 (complex) was characterized by a loss of rhythmicality but a persistence of an amplitude of up to 200 μv with relatively slow-frequency waves. No significant changes in the electroencephalogram were found with the use of usual doses of morphine, meperidine (Pethidine), and the muscle relaxants.[9]

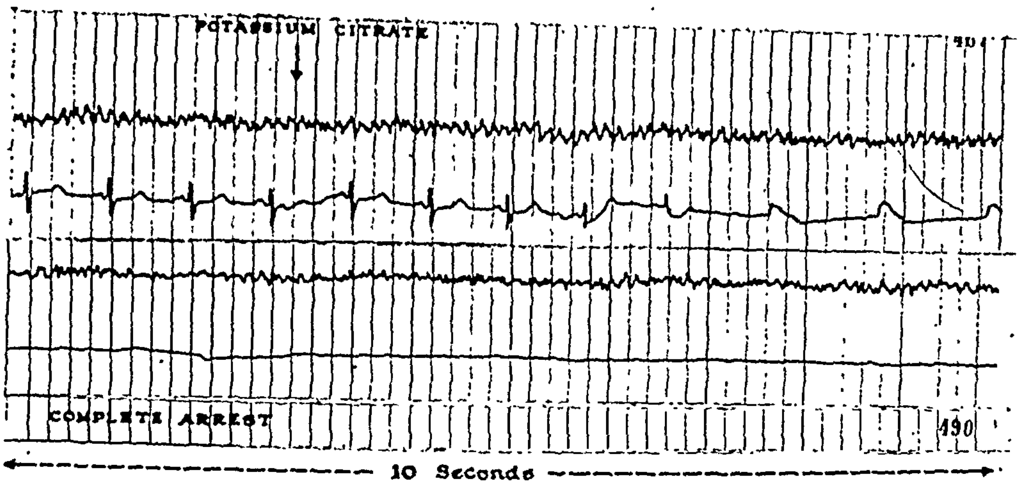

Fig. 1—Electroencephalogram and electrocardiogram in elective cardiac arrest after injection of potassium citrate into coronary circulation.

Anoxia may cause electroencephalographic signs similar to those produced by anesthesia. In one patient with a history of coronary infarction before the anesthetic was given, the electroencephlogram suggested deep anesthesia and the electrocardiogram showed evidence of myocardial anoxia.[3] The operation was delayed for one week, the hemoglobin level was increased from 11.5 to 15 Gm. by transfusions, and the operation was then carried out without incident.

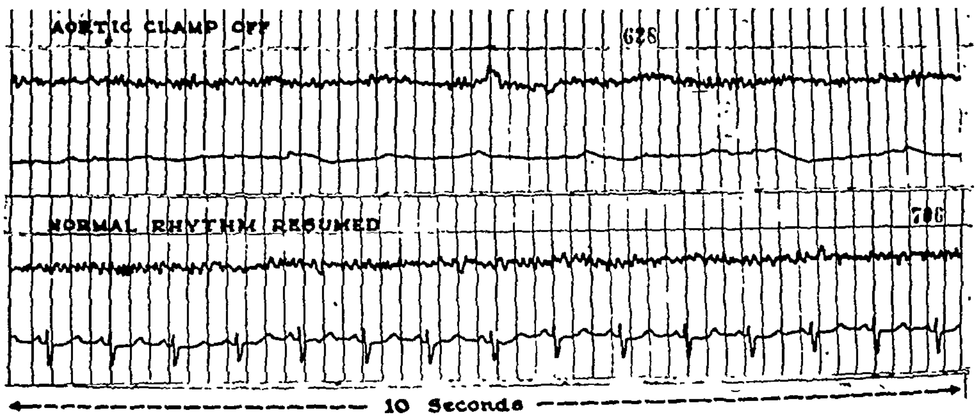

Fig. 2.—Electroencephalogram and electrocardiogram in elective cardiac arrest with restoration of normal cardiac rhythm.

On sudden cessation of blood flow to the brain, changes in the electroencephalogram appear immediately even though oxygenation has been adequate up to this point. This was exemplified by a case in which herniation of the heart from its pericardial sac occurred.[10] There was a sudden change from the normal rhythm (which was rapid frequency at low voltage) to waves of 3 to 4 cps with an amplitude of 150 μv. The previous normal rhythm was restored when the heart was returned to the pericardial sac. The herniation had caused immediate blockage of the great vessels of the heart with an instantaneous cessation of blood flow to the brain. (It might be presumed that this instantaneous effect is owing to anoxia rather than to hypercapnia of the brain.)

In another study, as carbon dioxide was added to the anesthetic mixture respiration was temporarily stimulated and a transient rise in blood pressure resulted.[3] Depression followed in 75% of the experiments and was accompanied by a moderate hypotension. The level of anesthesia, when 3, 4, or 5 and with ether or pentobarbital (Nembutal), deepened when carbon dioxide was administered without an increase in the concentration of the anesthetic agent in the blood. The same results were seen in eight patients under ether anesthesia when a rise in the serum carbon dioxide level occurred. A rise in pCO_2 from 46 to 72 mm. Hg was seen in one patient while the blood ether level remained constant (102 mg. per 100 cc.). The electroencephalogram showed a change from a type 3 to a type 4 pattern. This gave a tracing similar to that shown when the blood ether level was 125 mg. per 100 cc. with normal pCO_2. In types 1 or 2, hypercapnia acted as a stimulant without showing evidence of cortical depression. Findings in 17 patients showed that in the presence of high carbon dioxide blood levels less ether was needed to cause cortical depression, as indicated in the electroencephalogram. In the case of pentobarbital anesthesia with normal pCO_2, electroencephalogram changes with decreased oxygen saturation were slight until a level of 40% saturation was reached. Below this level, electroencephalographic changes suggested a rapid cortical depression. Another study also showed that the presence of excess carbon dioxide in the blood hastens deepening of anesthesia.[5] Other workers [2] have detected no change when carbon dioxide is added to the inhaled mixture (the concentration was not stated).

The effect of a fall in blood pressure on the electroencephalogram was studied by Beecher and others.[11] Reduction of the blood pressure by controlled cardiac tamponade produced changes during stabilized ether (and also stabilized pentobarbital) anesthesia which could not be distinguished from the changes resulting from deepening the anesthesia.

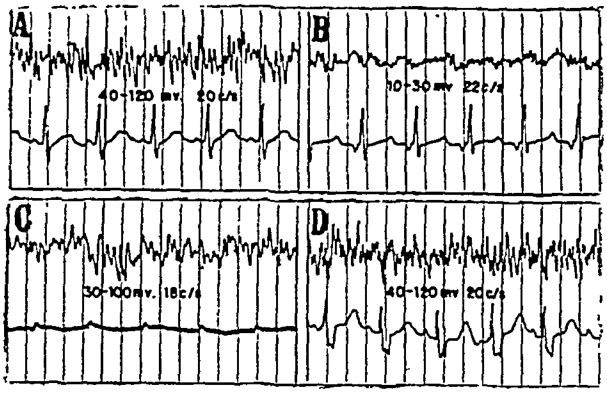

Fig. 3.—Electroencephalogram and electrocardiogram of 4½-year-old child with intraventricular septal defect and pulmonary hypertension, showing effect of moderate hypothermia on electroencephalogram. Child's temperature was *A*, 36 C; *B*, 31.5 C; *C*, 33 C; *D*, 34 C.

Hypotension induced by trimethaphan (Arfonad) camphorsulfonate was found to cause transient flattening of the electroencephalogram.[12] The more rapid the fall in blood pressure, the greater was the depression. If the systolic pressure was lowered no more than 10 mm. Hg per minute, pressures of 40 mm. Hg could be reached and maintained for periods of as long as one hour.

The carotid sinus, when distended, causes a progressive reduction in cortical activity, as shown by the appearance of slow waves on the electroencephalogram.[13] It is thought to be independent of blood pressure changes, inasmuch as it persists after bilateral vagotomy and high spinal section, which interfere with the hypotensive response to carotid sinus distention. This is considered to be the first example of an afferent inflow which "damps" rather than activates the cortex.

The effects of hypothermia were studied in monkeys.[14] Progressive depression of the electroencephalogram accompanied a fall in body temperature until, at 20 C (68 F), there was no evidence of cortical activity. When rewarming occurred, the electroencephalogram gradually resumed its normal form.

Changes During Elective Cardiac Arrest

The changes in the electrocardiogram and electroencephalogram as described above are illustrated in the following examples. All the patients in this series were subjected to elective cardiac arrest by injecting potassium citrate into the coronary circulation.[15]

Injection of Potassium Citrate into Coronary Circulation.—The electrocardiogram is normal before the injection of potassium citrate. The disintegration of the complexes follows and leads to a horizontal line, indicating absence of all activity (fig. 1). After removal of the aortic clamp at the end of the operation (fig. 2), small ventricular contractions appear, and, in a few minutes, a normal rhythm returns. The electroencephalogram meanwhile shows no significant changes.

Effect of Temperature.—A 4½-year-old patient, operated on for intraventricular septal defect and pulmonary hypertension, showed electroencephalographic changes due to temperature changes (fig. 3). The normal electroencephalogram when the patient's temperature was 36 C (97 F) was followed by evidence of depression (from 40 to 120 μv at 20 cps to 10 to 30 μv at 22 cps) when the temperature fell to 31.5 C (88.7 F) five minutes later. The lowering of body temperature resulted from the infusion of cool blood from the pump oxygenator. Return to a normal pattern (40-120 μv at 20 cps) followed restoration of temperature. An electroencephalogram showing a change of this sort on cooling may revert to normal even without a rise in body temperature as the brain becomes accustomed to the change. P waves occasionally persist during elective cardiac arrest.

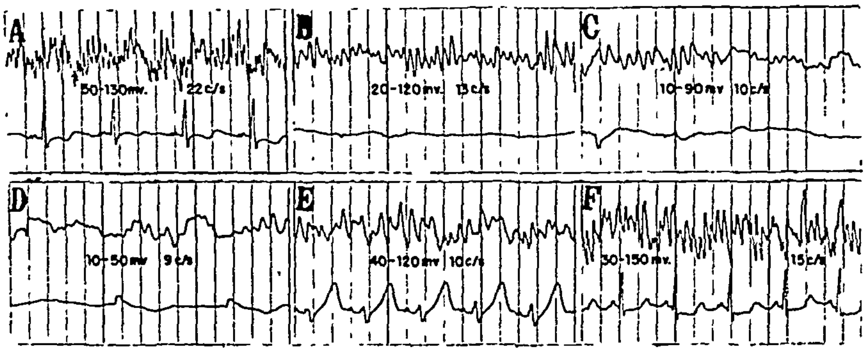

Fig. 4.—Tracings from 11-year-old child with aortic stenosis, showing effect of hypercapnia on electroencephalogram. Child's pCO_2 was, *A*, 52 mm. Hg; *C*, 82; *D*, 82; *E*, 52; *F*, 40.

Hypercapnia.—An 11-year-old patient, operated on for aortic stenosis, showed the effect of hypercapnia on the electroencephalographic tracing (fig. 4). A depression of the electroencephalogram (from 50 to 130 μv at 22 cps to 10 to 50 μv at 9 cps) accompanied a rise in venous pCO_2 from 52 to 82 mm. Hg. An improvement in the pattern resulted after a return of pCO_2 to 40 mm. Hg.

Irreversible Anoxia Due to Surgical Technical Difficulties (Fig. 5).—During an operation on a 27-year-old patient with mitral insufficency a dissecting aneurysm appeared. The electroencephalographic pattern showing bursts of activity separated by flat horizontal tracing was indicative of serious (usually fatal) cerebral anoxia (fig. 5).

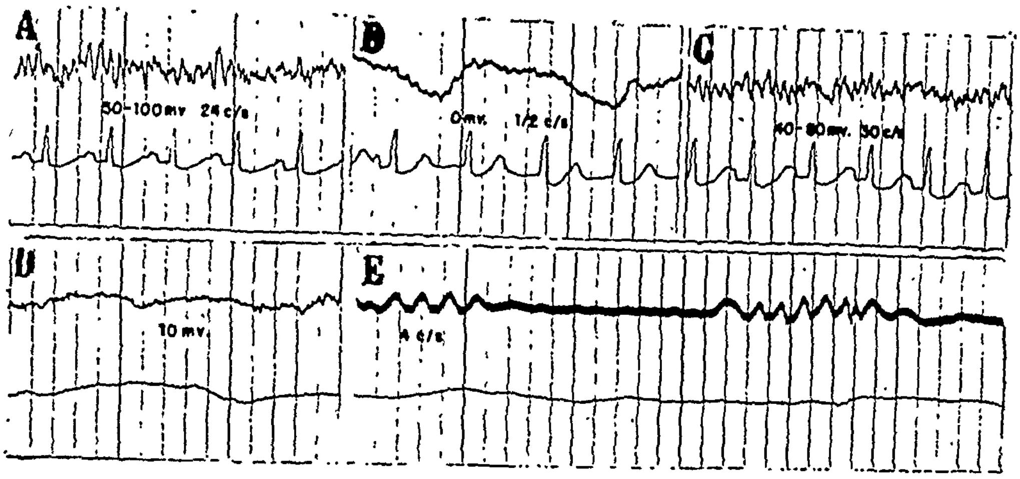

Fig. 5.—Tracings from 27-year-old patient with mitral insufficiency, showing irreversible anoxia (*E*) due to *surgical technical difficulties.*

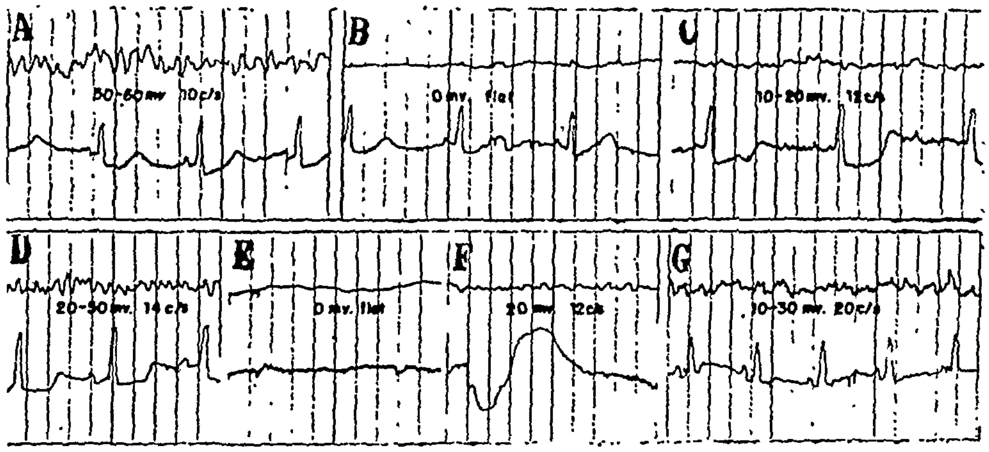

Fig. 6.—Tracings from 53-year-old man with aortic stenosis. Dissecting aneurysm caused cerebral anoxia which produced electroencephalographic changes seen at *B* and *E*.

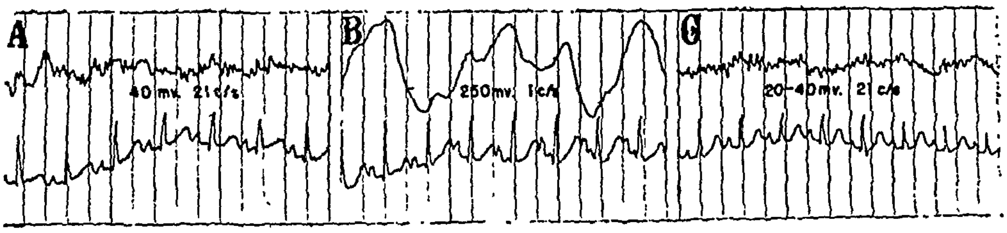

Fig. 7.—Tracings from 2-year-old child with tetralogy of Fallot with cyanosis. Evidence of cerebral depression shown at *B* improved on administration of 100% oxygen.

Dissecting Aneurysm (Fig. 6).—In a 53-year-old patient, operated on for aortic stenosis, a satisfactory electroencephalogram was recorded after the pump oxygenator had been started. A nearly flat tracing followed the appearance of a dissecting aneurysm, which, beginning where the stream of blood from the pump struck the wall of the aorta, extended toward the heart, obstructing the aorta and cutting off all bood flow to the brain. Th aneurysm then burst into the ascending aorta, restoring at least partially a blood supply to th brain. A flattened pattern resulted from application of clamp to the ascending aort preparatory to arresting th heart by the injection of potassium. This clamp obstructe the outlet of the aneurysm, an thus the brain circulation wa again cut off. A second ruptur of the aneurysm into the descending aorta restored onc again the cerebral blood suppl with a return of a fairly satisfactory electroencephalographic pattern. The patient survive the operation but died two da later due to coronary occlusio

Anoxia.—In a 2-year-old patient with Tetralogy of Fa lot and cyanosis the sequenc of patterns showed a chang which improved when vent lation was achieved by us of pure oxygen (fig. 7). Th change cannot be attributed t anoxia but rather shows th need for close scrutiny of a *possibilities.*

Summary

The electrocardiograms an electroencephalogram are helpful monitors in the management of patients undergoin cardiotomy. The electrocardiogram reveals valuable information of cardiac arrhythmias many of which respond to appropriate therapy. Little evidence is afforded on anoxia and hypercapnia, however.

The electroencephalogram is useful as an indicator of cerebral oxygenation during elective cardiac arrest when most of the signs of anesthesia fail. The depression of the cortical output results from hypotension, decreased blood flow, hypothermia, and also cerebral anoxia. Depression also accompanies anesthesia, hypercarbia, and stimulation of the carotid body.

Many factors produce changes in the electroencephalogram, none of which is specific. These changes, when they are seen, are a clear indication for the careful investigation of all possible causes of cerebral depression.

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ELECTIVE CARDIAC ARREST.—The initial report by Melrose and associates on laboratory observations of elective cardiac arrest was published in July, 1955. This team of English workers recognized the importance of a dry motionless field in the development of open-heart surgery. Their approach, based on the early work reported by Ringer, in 1883, and Hooker, in 1929, was further stimulated by the more recent publications of Montgomery, Prevedel, and Swan. Melrose and co-workers developed a simple technique using a potassium citrate-blood mixture for inducing elective cardiac arrest in dogs. Although they did not report clinical application, their concept of elective cardiac arrest and the simplicity of their method had particular appeal to us. The decision to employ this technique at the Cleveland Clinic was made after an intensive experimental trial. On Feb. 17, 1956, the Melrose technique of elective cardiac arrest was utilized in the closure of an interventricular septal defect. The patient, a 17-month-old child, is thought to be the first clinical case in which elective cardiac arrest was successfully employed. Since the initial operation, elective cardiac arrest has been utilized by the authors in 73 operations; a total of 84 open cardiotomy procedures have been performed with the aid of pump-oxygenators. Cardiac arrest has been employed in operations for closure of septal defects at the auricular and ventricular levels, correction of mitral and tricuspid insufficiency, aortic valvular commissurotomy, correction of pulmonic valvular and infundibular stenosis, and in attempts to correct transpositions of the great vessels. On the basis of this experience, a preliminary conclusion is justified, namely: the safety and the benefits provided by the Melrose technique for elective cardiac arrest justify its use in surgery on the open heart.—D. B. Effler, M.D., L. K. Groves, M.D.. F. M. Sones Jr., M.D., H. F. Knight Jr., M.D., and W. J. Kolff, M.D., Elective Cardiac Arrest—An Adjunct to Open-Heart Surgery, *The Journal of Thoracic Surgery*, October, 1957.

HYPOVENTILATION AND HYPERVENTILATION DURING ANESTHESIA FOR THORACIC SURGERY

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and
Michel Bourgeois-Gavardin, M.D., Durham, N. C.

It is especially necessary to guard against the development of hypercapnia and hypoxia in the patient during thoracic surgery because so many factors may combine to interfere with pulmonary ventilation. It is especially difficult to judge the depth of anesthesia and adequacy of gas exchange when spontaneous respiration is replaced by controlled respiration. The possible advantages of deliberate hyperventilation were explored in 128 patients undergoing thoracic surgery. In most of them ventilation was achieved by manual compression of the reservoir bag, but in about 20 patients mechanical respirators were used. Samples of arterial blood were obtained for determinations of pH, pCO_2, and oxygen saturation. Four case histories are given showing the possibility of maintaining normal acid-base balance or producing an alkalosis in this way, and illustrating the inadequacy of spontaneous respiration in some cases. There was no evidence that the methods of artificial respiration used hindered the return of venous blood to the heart. Excessive depth of anesthesia was avoided by using concentrations and quantities of anesthetics such that it was virtually impossible for deep planes of anesthesia to be attained. No ill-effects attributable to alkalosis were seen even in patients maintained in that state for several hours. The results indicate that an extensive evaluation of the relative merits of respiratory acidosis and alkalosis is desirable.

The aim at all times during anesthesia is to provide adequate alveolar ventilation so that oxygen may be supplied to the tissues in adequate concentrations and carbon dioxide eliminated in proper amounts. During thoracic surgery several factors, acting singly or in combination, may interfere with normal ventilation. The common denominator of these several forces is the diminution of gaseous exchange at the alveolar membrane.

Precipitating causes of hypercapnia and, in many instances, hypoxia include the following: 1. Drugs employed during general anesthesia. Nearly all such agents either depress the respiratory center directly or prevent normal transmission of impulses from the center to the muscles of respiration. Due to these effects, the anesthetized patient is incapable of reacting to the stimuli normally initiated by hypercapnia. 2. Technical anesthetic difficulties. Upper respiratory obstruction or laryngospasm during induction, difficulty in the insertion of an endotracheal tube, the placement of a tube beyond the carina into the right main bronchus, and the overzealous inflation of an endotracheal cuff may interfere with gaseous exchange. 3. Posture of the patient. During anesthesia any position which interferes with the expansion of the thoracic cage will diminish respiratory exchange. In this category the heavy arm of the surgical assistant leaning on the patient's chest must not be forgotten. 4. Disease within the lung parenchyma. In most thoracic operations normal alveolar ventilation is compromised by disease processes in a portion of the lung. 5. Altered pulmonary mechanics associated with an open thorax. 6. Surgical manipulations within the thoracic cavity. Partial collapse of a lung, necessary in the performance of surgery, may allow the perfusion of blood but will prevent exchange of gases because of alveolar collapse. The situation might be likened to that present with an arteriovenous shunt. 7. Method of respiratory exchange permitted or initiated by the anesthesiologist. This factor is one in which a relatively wide range of variability exists.

These etiological mechanisms have been well documented within the last few years and exist as real entities in day-to-day practice.[1] There is unanimity of opinion that respiratory acidosis is the result of inadequate alveolar ventilation. As a corollary, it is agreed that respiratory acidosis should be prevented in the best interests of the patient.

In clinical practice difficulty has arisen in preventing respiratory acidosis and hypoxia because there are no clear-cut signs to indicate their presence. Cyanosis is not apparent until the arterial oxygen saturation diminishes to 75 or 70% of normal, and the signs of hypercapnia are masked by the state of anesthesia. Assisting respiration by manual compression of the reservoir bag of the gas machine during the inspiratory phase is practiced

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Read in the Symposium on Basic Problems in Thoracic and Cardiovascular Surgery before the Joint Meeting of the Section on Anesthesiology and the Section on Diseases of the Chest at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

widely, but it is realized that such augmentation of ventilation, even when performed by an "educated" hand, often fails to prevent acidosis. Within recent years attempts have been made to fill the breach by utilizing mechanical ventilators.[2] For best performance these ventilators require the complete abolition of spontaneous respiration. They "control" the respirations of the patient.

Although recommended sporadically for a number of years, controlled respiration has not been received with enthusiasm in all centers. However, in 1952,[7] it was suggested that, if normal acid-base balance is to be maintained with modern anesthetic techniques which incorporate muscle-relaxant drugs, controlled respiration is necessary. Furthermore, with the peculiar conditions associated with thoracic surgery, it has been indicated that "adequate" ventilation implies a respiratory exchange greater than that necessary in the conscious resting state.[11] Therefore, hyperventilation might be required to maintain a normal acid-base balance.

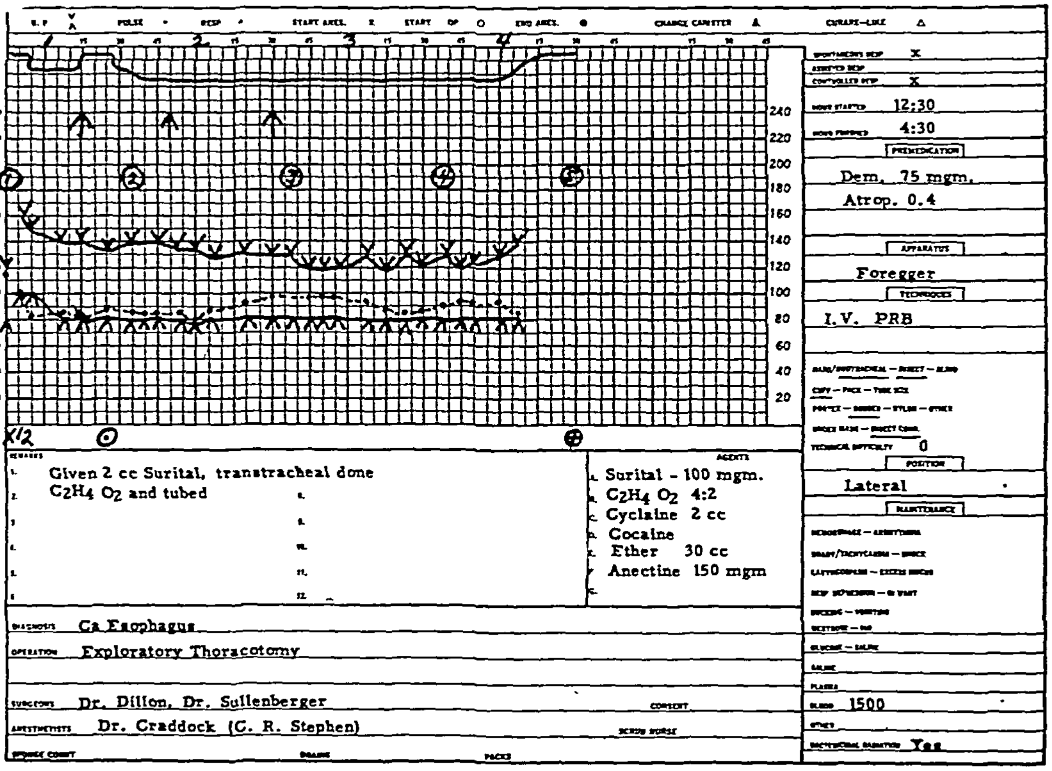

X 12:30
X 4:30
PREMEDICATION
Dem. 75 mgm.
Atrop. 0.4
APPARATUS
Foregger
TECHNIQUES
I.V. PRB
0
POSITION
Lateral
MAINTENANCE
1. Given 2 cc Surital, transtracheal done
2. C_2H_4 O_2 and tubed
AGENTS
a. Surital - 100 mgm.
b. C_2H_4 O_2 4:2
c. Cyclaine 2 cc
d. Cocaine
e. Ether 30 cc
f. Anectine 150 mgm
Ca Esophagus
Exploratory Thoracotomy
Dr. Dillon, Dr. Sullenberger
Dr. Craddock (C. R. Stephen)
1500
Yes
240
220
200
180
160
140
120
100
80
60
40
20
1
2
3
4
5
X/2

Fig. 1 (case 1).—Anesthetic record for patient who underwent exploratory thoracotomy for nonresectable carcinoma of esophagus. Description of circled numbers appears in table 1.

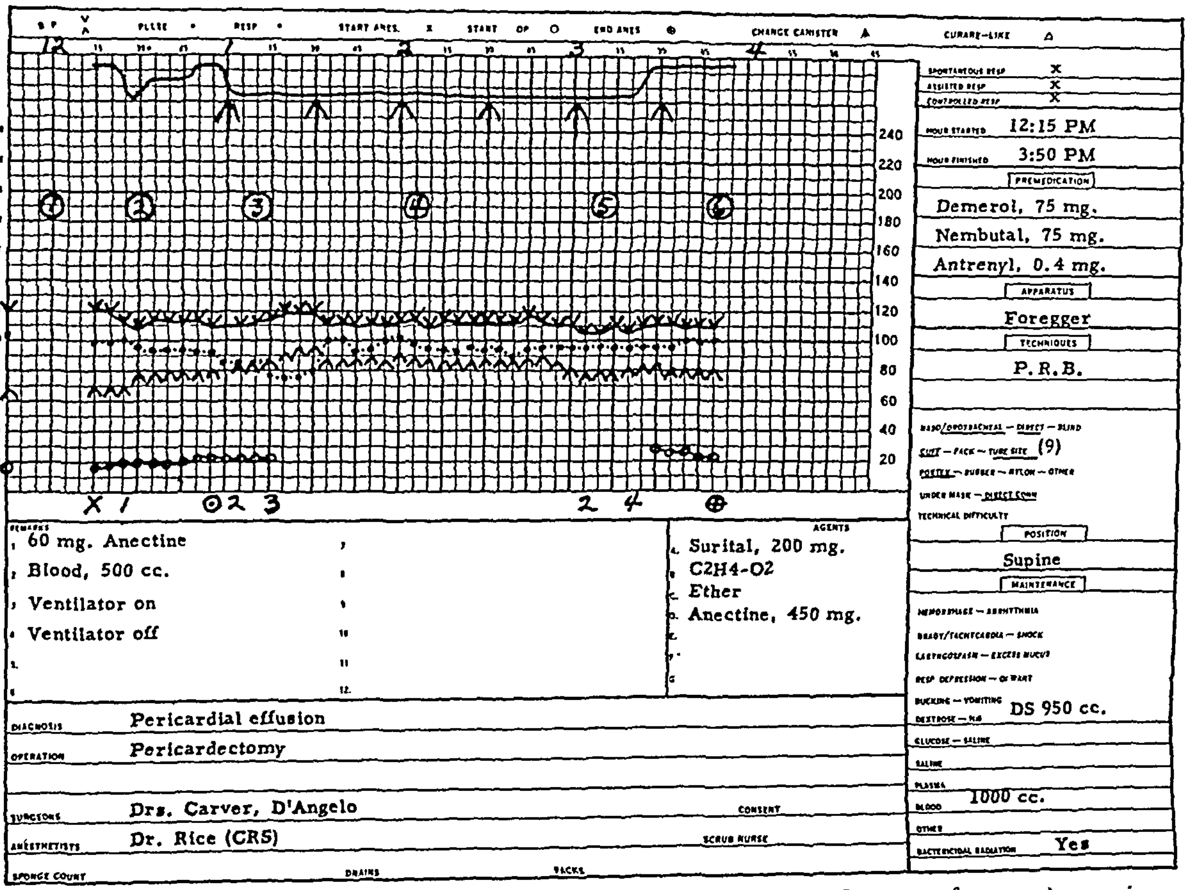
Methods

An effort has been made to study clinically the effects of hyperventilation in 128 patients in whom thoracic surgery was done. Spontaneous respiration was prevented during operation by the use of drugs and by conscious attempts to provide a greater than normal ventilation. In the majority of patients, ventilation was achieved by manual compression of the reservoir bag, although in about 20 the Jefferson and Stephenson ventilators were used. A variety of anesthetics were employed, including nitrous oxide, ethylene, ether, cyclopropane, fluothane, thiamylal (Surital) sodium, thiopental (Pentothal) sodium, hexobarbital (Evipal) sodium, meperidine hydrochloride, and hydroxydione (Viadril). Succinylcholine chloride was the principal muscle-relaxant utilized to aid in controlling respiration. A partial rebreathing technique, employing flows of gas between 3 and 7 liters per minute, was preferred. Both poor-risk and good-risk patients were included in the series. Respiration was controlled in a regular and rhythmic fashion; the inspiratory phase occupied one-third of the respiratory cycle, and the remainder was occupied by passive expiration and a pause. In the patients for whom mechanical ventilation was done, a one-to-one ratio was believed feasible because of the negative pressure exerted during the expiratory phase. By such regulation of respiration, interference with cardiac output was considered minimal.

In these patients, Cournand arterial needles were placed in either the radial or the brachial artery and samples of blood were drawn into heparinized, oiled syringes at regular intervals. The syringes were iced immediately, and the pH was determined within 10 minutes, with appropriate corrections for temperature. The carbon dioxide tension was calculated from the carbon dioxide content in volumes per cent, and the pH was determined by use of the nomogram of Peters and Van Slyke (Henderson-Hasselbach equation). Arterial oxygen saturations were determined in a Wood cuvette oximeter. The several anesthesiologists, usually residents, participating in this study were not informed of the results during the procedure, but it was believed that the sampling procedure did enhance their efforts to produce hyperventilation in the patients.

Results

The over-all results show that 80 patients (62.5%) were maintained in a state of relative alkalosis for the greater part of the operation. In 44 patients (34.4%) a normal acid-base balance was held, and 4 (3.1%) showed objective evidence of acidosis during the operation. Some of the findings encountered during surgery are illustrated best by the following case reports.



Spontaneous resp X
Assisted resp X
Controlled resp X

Hour started 12:15 PM
Hour finished 3:50 PM

Premedication
Demerol, 75 mg.
Nembutal, 75 mg.
Antrenyl, 0.4 mg.

Apparatus
Foregger

Techniques
P.R.B.

Naso/orotracheal — direct — blind
Cuff — pack — tube size (9)
Portex — rubber — nylon — other
Under mask — direct conn
Technical difficulty

Position
Supine

Maintenance
Hemorrhage — arrhythmia
Brady/tachycardia — shock
Laryngospasm — excess mucus
Resp depression — or want
Bucking — vomiting
Dextrose — H₂O DS 950 cc.
Glucose — saline
Saline
Plasma
Blood 1000 cc.
Other
Bactericidal radiation Yes

Remarks
1 60 mg. Anectine
2 Blood, 500 cc.
3 Ventilator on
4 Ventilator off
5
6
7
8
9
10
11
12

Agents
A. Surital, 200 mg.
B. C2H4-O2
C. Ether
D. Anectine, 450 mg.
E.
F.
G.

Diagnosis Pericardial effusion
Operation Pericardectomy
Surgeons Drs. Carver, D'Angelo Consent
Anesthetists Dr. Rice (CRS) Scrub nurse
Sponge count Drains Packs

Fig. 2 (case 2).—Anesthetic record for patient who underwent pericardiectomy for massive pericardial effusion. Description of circled numbers appears in table 2.

Case 1.—A 72-year-old female was emaciated and emphysematous; she had lost 60 lb. (30 kg.) of weight during the six months before operation. Physical examination, barium swallow, and esophagoscopy indicated a probable carcinoma of the esophagus. An exploratory thoracotomy was scheduled. Figure 1 and table 1 show the anesthetic record and arterial blood findings during operation. Anesthesia was induced with thiamylal and maintained with ethylene and oxygen, 4:2 liters per minute, along with traces of ether. A dilute succinylcholine drip (0.1%) aided in maintaining controlled respiration.

After 30 minutes of spontaneous respiration in the lateral position, prior to the opening being made in the pleural cavity, this patient showed respiratory acidosis. With institution of manually controlled respiration, alkalosis developed. In older patients with moderate emphysema, this condition is maintained easily and with minimal utilization of drugs. Normal acid-base balance was reestablished readily at the end of operation.

Table 1.—*Findings in Thoracotomy for Carcinoma of Esophagus**

	Time	pH.	pCO_2	O_2 Sat. %	
1.	12:30	7.39	37.8	97	Control—awake
2.	1:35	7.31	66.0	98	Spon. resp. 30 min.
3.	2:40	7.62	20.4	90	Controlled resp. exploring
4.	3:40	7.63	17.7	99	Controlled resp. closing
5.	4:30	7.37	39 8	99	End of case

* Description of code for figure 1.

Case 2.—A 27-year-old female had suffered from pain in the chest for one month. Physical examination, roentgenographic evidence, and pericardial tap indicated a massive pericardial effusion of undetermined etiology. At operation a pericardiectomy was performed. Figure 2 and table 2 show the anesthetic record and laboratory findings. Anesthesia was induced with thiamylal and maintained with ethylene and oxygen, 4:2 liters per minute, with ether added as required. A succinylcholine drip (0.1%) aided in preventing spontaneous respirations.

In this patient a moderate degree of alkalosis was maintained with manually controlled respiration. The institution of mechanical ventilation, with the

Jefferson ventilator used in a one-to-one phase with a positive pressure of 15 cm. H_2O and a negative pressure of 5 cm. H_2O, produced a more marked alkalosis. An acid-base balance approaching normal was evident at the conclusion of operation. This case is of interest in that the institution of vigorous controlled respiration did not apparently interfere with cardiovascular dynamics in a situation where normal cardiac output probably was compromised by the pericardial effusion.

TABLE 2 *(Case 2).—Findings in Pericardiectomy for Massive Pericardial Effusion**

	Time	pH.	pCO_2	O_2 Sat. %	
1.	12:00	7.45	37.4	98	Control awake
2.	12:30	7.51	32.9	99	Just after intubation, controlled
3.	1:10	7.62	30.3	99	Controlled
4.	2:05	7.67	15.6	100	On Jefferson 45 min.
5.	3:10	7.71	12.6	99	Still on Jefferson
6.	3:50	7.47	31.3	100	Spont. resp., awake, extubated

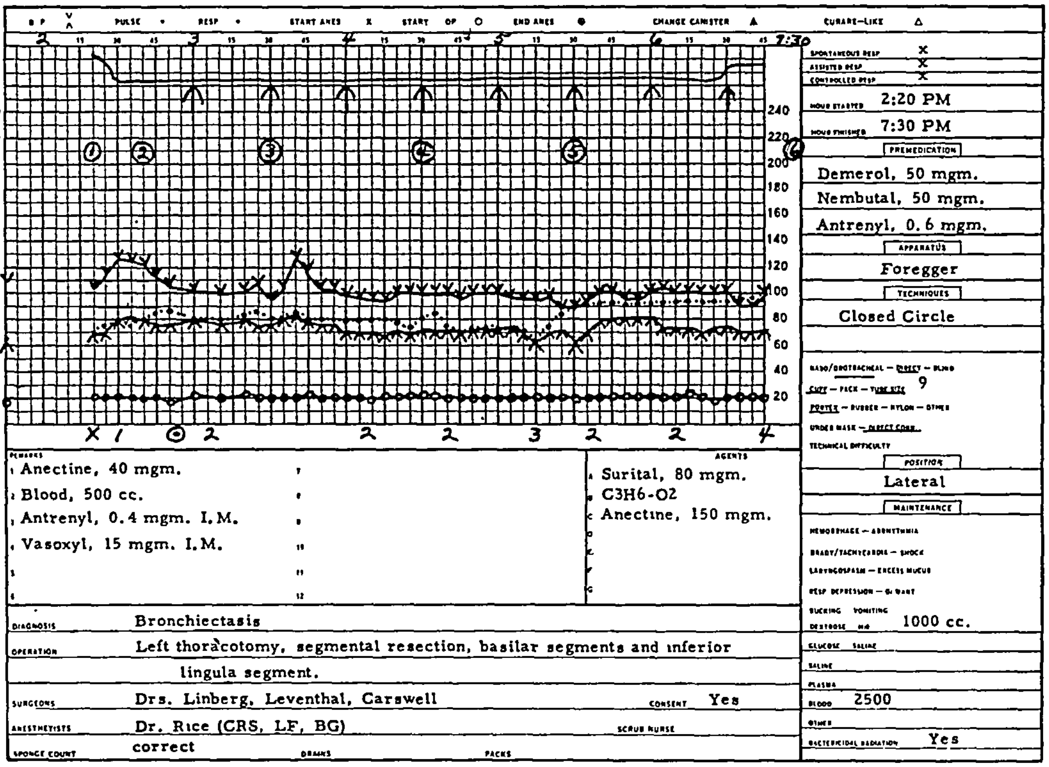
* Description of code for figure 2.

CASE 3.—A 31-year-old female, weighing 95 lb. (47.5 kg.), had extensive bilateral bronchiectasis. She coughed up 6-12 oz. of sputum per day. Her maximum breathing capacity was 44% of normal, and her pulmonary washout time was 15 minutes (normal 4-6 minutes). Moderate air-trapping and emphysema were present. After suitable preparation, a thoracotomy on the left was performed with segmental resections of the basilar segments of the left lower lobe and the inferior lingular segment of the left upper lobe. Secretions were abundant during operation and necessitated frequent aspiration. Figure 3 and table 3 show the anesthetic course and blood findings. Anesthesia was induced with thiamylal and maintained with cyclopropane and oxygen, with use of a closed-circuit system. A succinylcholine drip (0.1%) assisted in maintaining controlled respiration.

TABLE 3 *(Case 3).—Findings in Thoracotomy for Bronchiectasis**

	Time	pH.	pCO_2	O_2 Sat. %	
1.	2:20	7.39	43.4	97	Induction just begun, spon. resp.
2.	2:40	7.35	48.8	100	Controlled resp., extrapleural
3.	3:30	7.36	43.2	100	Controlled resp., in chest
4.	4:30	7.37	43.0	98	Controlled
5.	5:30	7.37	40.7	100	Controlled
6.	7:30	7.33	52.8	73	Extubated, spon. resp., awake

* Description of code for figure 3.



SPONTANEOUS RESP X
ASSISTED RESP X
CONTROLLED RESP X
HOUR STARTED 2:20 PM
HOUR FINISHED 7:30 PM

PREMEDICATION
Demerol, 50 mgm.
Nembutal, 50 mgm.
Antrenyl, 0. 6 mgm.

APPARATUS
Foregger

TECHNIQUES
Closed Circle

TUBE SIZE 9

POSITION
Lateral

DEXTROSE 1000 cc.
BLOOD 2500
BACTERICIDAL RADIATION Yes

REMARKS
1 Anectine, 40 mgm.
2 Blood, 500 cc.
3 Antrenyl, 0.4 mgm. I.M.
4 Vasoxyl, 15 mgm. I.M.

AGENTS
A Surital, 80 mgm.
B C3H6-O2
C Anectine, 150 mgm.

DIAGNOSIS Bronchiectasis
OPERATION Left thoracotomy, segmental resection, basilar segments and inferior lingula segment.
SURGEONS Drs. Linberg, Leventhal, Carswell CONSENT Yes
ANESTHETISTS Dr. Rice (CRS, LF, BG)
SPONGE COUNT correct

Fig. 3 (case 3).—Anesthetic record for patient who underwent thoracotomy for severe bronchiectasis. Description of circled numbers appears in table 3.

This patient had advanced pulmonary disease which prevented normal alveolar ventilation. The margin of reserve was critical. Manually controlled ventilation served to maintain a normal acid-base balance during operation. Abundant amounts of oxygen in the anesthetic mixture prevented hypoxia. However, at the conclusion of surgery, when spontaneous respirations had been established and the patient was able to answer questions, a moderate respiratory acidosis was present, associated with definite hypoxia. The early postoperative course of patients with severe pulmonary disease must be watched carefully.

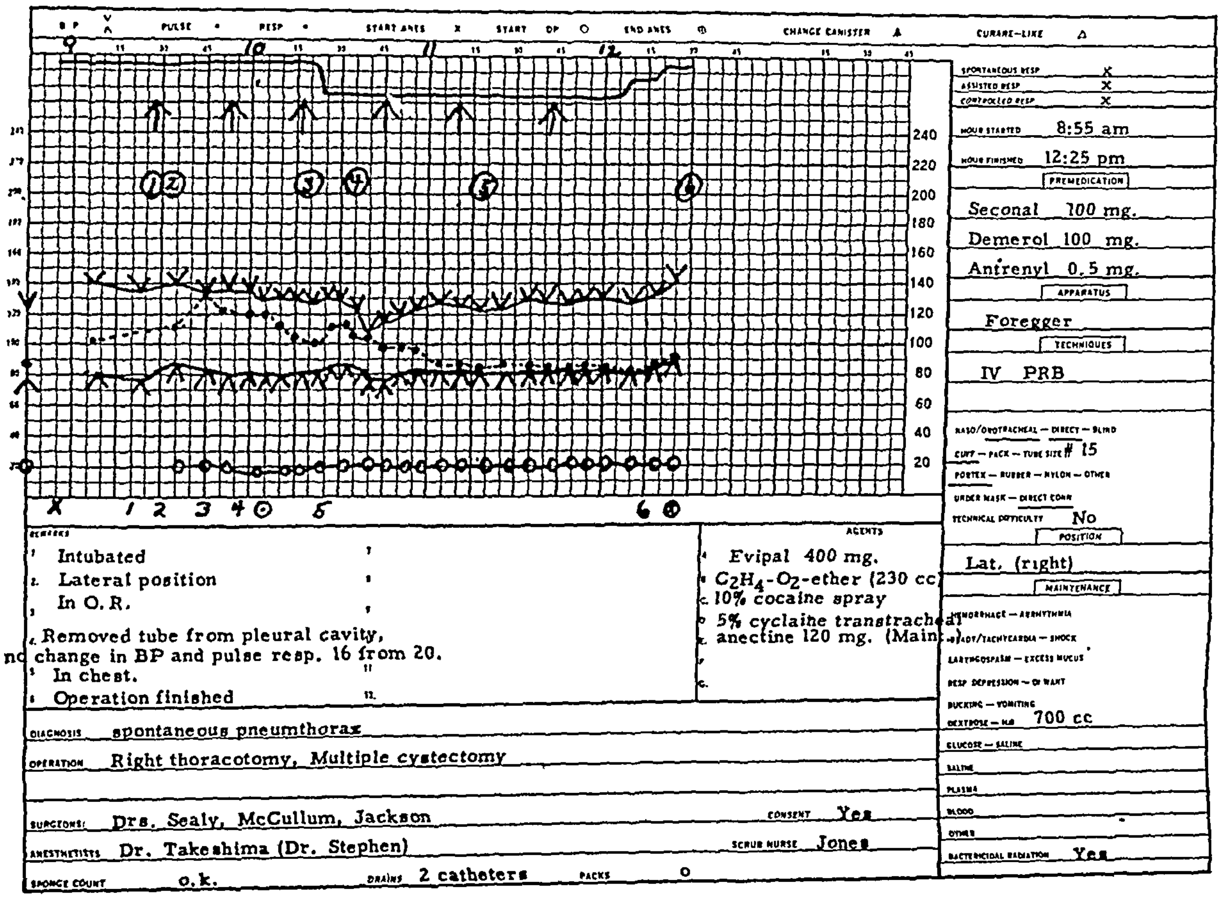
Case 4.—A 58-year-old male had suffered from acute shortness of breath on several occasions in the last four years. He was known to have severe asthma and had had spontaneous pneumothorax two or three times. On this hospital admission, he again had a pneumothorax which failed to respond to conservative measures. His vital capacity was 36.4% of normal, and his maximum breathing capacity was 27.6% of normal. The pulmonary washout time was 17 minutes. The diagnosis was severe asthma and emphysema, with restricted total capacity consistent with pneumothorax. A thoracotomy was performed, and the air leaks in the lung were oversewn. Figure 4 and table 4 show the anesthetic record and the arterial blood findings. Anesthesia was induced with hexobarbital and maintained with ethylene and oxygen, 4:2 liters per minute, with traces of ether. Succinylcholine in a dilute drip (0.1%) aided in controlling respiration after the lung was exposed.

Table 4 (*Case 4*).—*Thoracotomy for Spontaneous Pneumothorax**

	Time	pH.	pCO_2	O_2 Sat. %	
1.	9:25	7.20	74.5	60	Spon. resp. C_2H_4, ether ind. 30 min.
2.	9:30	7.18	78.1	66	Intubation, expiratory spasm
3.	10:20	7.23	69.8	95	Spon. resp., in chest wall
4.	10:35	7.33	48.1	98	In chest controlled resp. 10 min.
5.	11:20	7.31	46.2	96	Controlled resp.
6.	12:30	7.20	66.9	97	End of case, spon. resp.

* Description of code for figure 4.

This case illustrates one of the more difficult problems encountered in production of anesthesia. The preoperative findings and the arterial blood studies indicated that adequate alveolar ventilation was difficult to attain. With the patient under anesthesia, one hesitated to apply positive pressure to the airway until the thoracic cavity was open for fear of creating a tension pneumothorax and complicating the issue still more. The first three arterial blood samples revealed that spontaneous respiration in this patient induced a moderately severe respiratory acidosis associated with severe hypoxia. The institution of controlled respiration, with expansion of the collapsed lung, improved the situation but failed to correct the respiratory acidosis entirely. The reestablishment of spontaneous respiration at the conclusion of operation again created a respiratory acidosis.



SPONTANEOUS RESP X
ASSISTED RESP X
CONTROLLED RESP X
HOUR STARTED 8:55 am
HOUR FINISHED 12:25 pm

Seconal 100 mg.
Demerol 100 mg.
Antrenyl 0.5 mg.

Foregger

IV PRB

NASO/OROTRACHEAL — DIRECT — BLIND
CUFF — PACK — TUBE SIZE # 15
PORTEX — RUBBER — NYLON — OTHER
UNDER MASK — DIRECT CONN
TECHNICAL DIFFICULTY No

Lat. (right)

HEMORRHAGE — ARRHYTHMIA
BRADY/TACHYCARDIA — SHOCK
LARYNGOSPASM — EXCESS MUCUS
RESP DEPRESSION — O₂ WANT
BUCKING — VOMITING
DEXTROSE — H₂O 700 cc
GLUCOSE — SALINE
SALINE
PLASMA
BLOOD
OTHER
BACTERICIDAL RADIATION Yes

1 Intubated
2 Lateral position
3 In O.R.
4 Removed tube from pleural cavity, no change in BP and pulse resp. 16 from 20.
5 In chest.
6 Operation finished

a Evipal 400 mg.
b C_2H_4-O_2-ether (230 cc
c 10% cocaine spray
d 5% cyclaine transtracheal
e anectine 120 mg. (Main

DIAGNOSIS spontaneous pneumthorax
OPERATION Right thoracotomy, Multiple cystectomy
SURGEONS Drs. Sealy, McCullum, Jackson CONSENT Yes
ANESTHETISTS Dr. Takeshima (Dr. Stephen) SCRUB NURSE Jones
SPONGE COUNT o.k. DRAINS 2 catheters PACKS 0

Fig. 4 (case 4).—Anesthetic record for patient who underwent thoracotomy for spontaneous pneumothorax. Description of circled numbers appears in table 4.

Comment

It seems apparent from this study that, in a majority of patients undergoing thoracic surgery, a state of alkalosis or a normal range of acid-base balance may be obtained by employing controlled respiration with a conscious effort to achieve hyperventilation. This method may therefore serve as a technique to avoid undesirable respiratory acidosis. However, certain objections arise concerning potential dangers associated with this technique. These hazards may be considered under three headings.

First, the possibility exists that controlled respiration, altering respiratory dynamics as it does, may interfere with venous return and cardiac output. If performed improperly, such may be the case.[4] On the other hand, if intermittent-positive-pressure breathing provides a pressure curve at the mouth that shows (1) a gradual increase in pressure during inspiration, (2) a rapid drop in pressure at the beginning of exhalation, (3) a mean pressure during the expiratory phase as near atmospheric as possible, and (4) an expiratory time exceeding the inspiratory time, there will be minimal disturbance to circulation.[5] In the present study, the blood pressure and pulse records during anesthesia showed minimal evidence of alteration in cardiovascular dynamics. In any given instance, hypotension could be produced temporarily by application of repeated high inspiratory pressures with minimal pauses between inspirations. Controlled respiration should be instituted with caution in patients suffering from shock or having greatly decreased blood volume. In these patients hypotension may occur with the recommended technique because the reflex increase in peripheral venous pressure normally initiated is impaired.[6] The use of a negative pressure during the expiratory phase is recommended in such instances.

Second, during controlled respiration one of the most important signs of depth of anesthesia, the type of spontaneous respiration, is lost. How can one determine the plane of anesthesia during controlled respiration? In the absence of electroencephalographic monitoring, the answer to this question is not simple. One could say that herein lies the "art" of anesthesiology. More to the point, perhaps, is the adoption of a concept that under these conditions anesthetics should be employed in such concentrations and quantities that it is virtually impossible for deep planes of anesthesia to be attained. When potent inhalation drugs, such as ether, are being used, the risk of deep planes of anesthesia or overdosage is reduced greatly if partial rebreathing techniques with high flows of gases (3-7 liters per minute) are adopted. The judicious use of muscle-relaxant drugs to provide relaxation when needed or to aid in controlling respiration is often an important adjunct. A proper pharmacological balance relies not too much on anesthetics and not too much on relaxant compounds. The total dose of any injectable agent must be limited by judgment and experience.

Finally, if controlled respiration results in hyperventilation, with the production of alkalosis, does this alteration in acid-base balance increase the over-all risk to the patient? The answer to this question at present is unknown. Rapoport and others[7] have indicated that the only consistent change in the electrolyte structure of arterial blood associated with overbreathing in man is the rapid decrease in carbon dioxide tension associated with an increase in pH.

Physiological changes have been shown to occur with alkalosis. In dogs, a shift of pH from 7.35 to 7.70 will reduce coronary flow by 50%.[8] This apparent constriction of the coronary vessels results in a myocardial hypoxemia. Kety and Schmidt[9] showed that in man in a conscious state a similar shift of pH from 7.38 to 7.54 decreased cerebral blood flow by 36% and increased cerebral vascular resistance from 1.6 to 3.1 units. It is known that decreased carbon dioxide tension is the strongest cerebral vasoconstrictor yet demonstrated. However, the vasoconstrictor influence is actually the intrinsic tone of the vessels themselves, and the exciting agent is removal of the normal vasodilating tendency of carbon dioxide.

In this regard it is interesting to note that thiopental depresses the intrinsic tone of the cerebral vessels. In experiments on man, the cerebral metabolic requirements were reduced by 40% while the cerebral vascular resistance was reduced by 20%.[10] Thus, under the influence of an anesthetic the normal cerebral adjustment appears to break down. Whether the influence of anesthesia would tend to compensate for the changes produced by alkalosis remains to be shown.

In this study in which respiratory alkalosis was induced in 80 patients, sometimes for several hours, no ill-effects were noted clinically either during or after operation. Almost invariably the acid-base balance returned easily to normal levels at the conclusion of surgery. Patients awakened quickly and were well oriented.

A word must be said in support of the impression that controlled respiration, and presumably hyperventilation with alkalosis, contributes in and of itself to the state of narcosis.[11] If by use of this technique the amounts of anesthetics required by the patient can be reduced, a certain advantage is achieved. Perhaps more potential harm than good is the ultimate result, but this fact has yet to be proved.

Summary

Prevalent opinion indicates that respiratory acidosis, although produced easily in thoracic surgery, is potentially harmful and to be avoided if possible. The ideal of preservation of normal acid-base balance is difficult to achieve clinically. A group of 128 patients were maintained on controlled respiration, and a purposeful effort was made to produce hyperventilation during operation. Eighty of these patients developed a state of respiratory alkalosis. Although the clinical progress of these patients was

satisfactory during and after operation, it remains to be shown whether a state of alkalosis is more or less desirable than a state of acidosis.

Box 3535 (Dr. Stephen).

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POSSIBLE CHANGES IN PRACTICE OF RADIOLOGY.—The year 1958 is likely to see changes, too, in the practice of radiology. It is expected that the Adrian Committee will shortly commence, in selected hospitals, its survey of the dose to the patient in diagnostic radiology and the results will ultimately permit a more accurate assessment of the amount of radiation reaching the reproductive organs of the people of this country from diagnostic radiology, an amount which was estimated in the M. R. C. report on "The Hazards to Man of Nuclear and Allied Radiations" as being 22 per cent of that derived from natural sources. If this figure proves to be much too small, some further limitations in the use of diagnostic X rays may be anticipated. In the field of radiotherapy the process of replacement of radium by X rays is likely to be accelerated now that it is possible to achieve a similar type of high-energy gamma radiation. After several clinical trials, supervoltage X-ray therapy is established as a valuable method of treating malignant disease, and providing the proper control is ensured, there is no reason why such apparatus should not be installed in every deep-therapy centre where it is likely in the foreseeable future to replace orthodox irradiation for most deep-seated neoplasms suitable for radiation treatment. Radium beam units in their turn seem likely to be superseded by apparatus using radioactive cobalt and possibly caesium, and in other applications isotopes are already performing some of the work previously done by radium. Further advances, however, may well depend on quite different considerations, such as better selection of cases, the pre-determination by histologists of the radio-sensitivity of individual growths, and a conquering of the technical difficulties inherent in present methods of using our knowledge of the effect of oxygen tension and other factors on radio-sensitivity. Discussions of these and allied subjects will give added interest to the International Cancer Congress to be held in London in July of this year.—Editorial, *The Journal of the Faculty of Radiologists,* January, 1958.

CHELATE IRON THERAPY

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Administration of effective doses of iron in the treatment of iron deficiency anemia is complicated by the fact that iron compounds are not innocuous. Toxicity experiments on dogs and rabbits are here summarized; they showed that the concentration of iron attained in the animal's serum determined the severity of the acute symptoms. Iron in the form of ferrous sulfate or ferrous gluconate raised the serum iron level higher, and caused more intense symptoms of intoxication, than did equivalent doses of iron choline citrate. Presenting the iron to the system as a chelate complex caused less adverse effects than the use of ionized or readily ionizable preparations. Test doses containing 120 mg. of iron were given orally to five volunteer subjects, first as ferrous sulfate solution, then two weeks later as iron choline citrate solution; determinations of serum iron before and after each administration showed that the sulfate caused a higher and less sustained rise in serum iron than did the complex. Given orally in tablet form thrice daily to 131 patients in doses ranging from 120 to 240 mg. of iron per day for a total of 3,303 treatment days, iron choline citrate caused gastrointestinal symptoms in only six patients, and in these it was possible to continue the medication since all symptoms presently disappeared. The clinical responses, both symptomatically and from a laboratory viewpoint, were entirely satisfactory and were comparable to those previously attained from other iron preparations utilized under similar circumstances.

The use of iron extends from its empirical applications in ancient times to the present day in which it is universally recognized as a specific form of therapy for iron deficiency anemia. The more rational use of iron has been brought about by the introduction of better diagnostic tools, a delineation of the different types of anemia, and an increasing knowledge of iron metabolism. However, since several excellent reviews covering these areas have been published in recent years, it is not our intent to discuss them here.

Iron deficiency anemia is one of the most common ailments assailing man. It can be caused by excessive blood loss, inadequate iron intake, defective iron absorption, increased iron requirements, and imperfect utilization of iron. Iron is present in various forms in all tissues and plays an indispensable role in intracellular respiratory processes. This metal is a basic component of hemoglobin, myoglobin, cytochrome, and the enzymes, catalase and peroxidase. In all of these substances the iron is present as a part of the porphyrin molecule. The remainder of the body iron is present almost entirely in protein-bound form. These bound forms of iron include the transport iron, transferrin, and the storage iron, ferritin and hemosiderin.

The average adult's diet contains approximately 12-15 mg. of iron per day, of which only about one-tenth is taken into the body iron pool. This iron uptake is balanced by a loss of approximately 1 mg. per day, thus effecting a slightly positive iron balance. A positive balance, however, may not be maintained in the menstruating female, who, because of blood loss, may require an additional 0.5-1.0 mg. of iron per day. Pregnancy is another cause of iron imbalance, for the mother must furnish iron to the fetus and may also lose blood during delivery. These factors account for the frequent finding of hypochromic anemia in women of the menstruating and child-bearing age group, despite a diet of normal iron content. Iron deficiency anemia is also common in infancy and childhood. In these age groups, iron needs are barely met by the best of diets and an inadequate uptake or a defect in iron utilization may result in a marked iron deficiency. In the adult male and the postmenopausal female, iron deficiency is usually associated with chronic blood loss which is often occult. Repeated blood donations may also produce severe iron loss and a consequent anemia.

From these considerations it is readily apparent why hypochromic anemia occurs with such frequency that it is one of the most common conditions presented to the physician for management. Fortunately, the physician has in his therapeutic armamentarium an efficient agent to correct this disorder. Iron is practically a specific, provided that three requisites are met, namely, that it be

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administered in proper dosage, that the anemia be one of true iron deficiency, and that no complicating factors exist. Those factors which may alter a response to iron therapy include continued blood loss, infection, inadequate uptake, abnormal storage processes, defective utilization, and marked nutritional deficiencies. There is little evidence that such agents as the vitamins, trace metals, and liver alter the response in treatment of the great majority of cases of hypochromic anemia. However, many substances other than iron are known to play essential roles in the complex processes of hemopoiesis. These factors may find rational application in those cases which fail to respond to iron therapy alone, but a careful analysis of the cause of hemopoietic failure should be made prior to their use.

The mere fact that there are so many iron preparations available indicates that, despite its specificity in hypochromic anemia, iron therapeusis is still a problem. One of the major difficulties associated with iron therapy is that of the occurrence of gastrointestinal disturbances, such as abdominal cramps, nausea, diarrhea, and constipation. Decreased dosage of iron and the administration of iron with food are often resorted to in an attempt to eliminate gastrointestinal distress. Such practices, however, reduce the amount of iron available for hemopoiesis and limit the effectiveness of treatment, often in those cases wherein the need is greatest.

In addition to the gastrointestinal distress often associated with therapeutic administration of iron, the problem of acute toxicity of iron must now be seriously considered. In recent years an increasing number of near-fatal and fatal poisonings have been reported after the accidental ingestion of iron by children.[1] It is now recognized that the margin between an effective therapeutic dose and a lethal dose of iron is smaller than has been generally assumed. Thus, it is evident that there still exists a pressing need for a form of iron which is therapeutically effective, well tolerated, and, at the same time, safe if accidently ingested in large doses.

It is well recognized that the presence of free or unbound iron in the body fluids and tissues is unphysiologic. This metal is maintained in a bound form, apparently as a chelate complex, not only in the hemoglobin molecule but throughout the processes of its uptake, transport, and storage. The ability of certain organic compounds termed chelating agents to unite with metallic ions is well recognized in the field of chemistry. The chelation of a metal greatly alters its physical, chemical, and physiological properties. It appeared reasonable, therefore, that the oral administration of a chelate iron complex might be advantageous both in terms of increasing therapeutic effectiveness and in terms of decreasing the irritating and toxic effects associated with iron administration.

The purpose of this report is to present our experiences with a chelated iron preparation and to discuss its therapeutic efficacy, gastrointestinal toleration, and relative toxicity. The discussion of the latter subject will include data summarized from animal studies conducted in our laboratories and reported in greater detail elsewhere.[2]

Materials and Methods

The chelated iron complex used in this study was iron choline citrate, a preparation containing 12.5% of elemental iron, synthesized by the interaction of ferric hydroxide and choline dihydrogen citrate under controlled conditions. The present report includes findings in four areas of investigation.

Therapeutic Evaluation.—Eighteen hospitalized patients with iron deficiency anemia of moderate to severe degree were given one sugar-coated tablet of iron choline citrate (40 mg. of iron per tablet) four times daily. The total dose was 160 mg. of elemental iron per day. The iron was administered under supervision between meals. Duration of therapy ranged from 28 to 60 days. The etiology of the anemia was that of chronic blood loss in all but two patients in whom it was believed to be due to long-standing nutritional deficiencies. Hemoglobin, erythrocyte, and reticulocyte determinations were performed every three to five days during the entire period of therapy. Hemoglobin was determined by the method of Sheard and Sanford.[3] A normal hemoglobin level determined by this method is considered to be 15 Gm. per 100 cc. For the purposes of interpretation of clinical responses, values for hemoglobin and erythrocyte determinations are expressed in terms of per cent of normal in one portion of our data (fig. 1).

Twenty-five nonhospitalized individuals with comparatively mild iron deficiency anemia were given a single daily dose of three iron choline citrate tablets (120 mg. of elemental iron). This single dose was administered before breakfast or at midforenoon on an empty stomach. The period of therapy ranged from 15 to 168 days. Hemoglobin level determinations were performed at two-week intervals. A close check was maintained to note evidences of intolerance. This test group was composed of students, staff members, nurses, and hospital personnel whose anemia was due primarily to nutritional inadequacies. No changes in dietary habits were made during the course of therapy.

Gastric Toleration Studies.—Eighty-eight hospitalized patients were given two iron choline citrate tablets (40 mg. of iron per tablet) three times daily. The medication was administered on an empty stomach for a maximal period of 12 days. Each patient was carefully observed for signs of adverse effects and was questioned for symptoms that might be related to the therapy employed.

Serum Iron Responses (Iron Tolerance Tests).—Five normal individuals (physicians and technicians) were given one fluid ounce of an aqueous ferrous sulfate solution containing 120 mg. of elemental iron. The test dose was administered on an empty stomach to eliminate any effect of food on iron absorption. Serum iron determinations were made by the method of Kingsley and Getchell.[4] Serum was obtained before administration of the test dose of iron and at two-hour intervals thereafter for a period of six hours. These same procedures were repeated in the same individuals after an interval of two weeks, except that a solution of iron choline citrate, offering an equal amount of elemental iron, was substituted for the ferrous sulfate.

Serum iron responses to 120 mg. of elemental iron as ferrous sulfate and iron choline citrate were determined in a similar manner in two separate groups of four patients with moderate to severe degrees of iron deficiency anemia.

Acute Toxicity Studies.—The acute toxicity studies in experimental animals, reviewed in part in this report, will be more fully recorded elsewhere.[2] These animal investigations included comparisons of the acute toxicity of iron choline citrate, ferrous sulfate, and ferrous gluconate. Another portion of the animal investigations was devoted to the study of relationships between serum iron levels and toxicity subsequent to the oral administration of each of these preparations.

Comparative acute toxicities of iron choline citrate, ferrous sulfate, and ferrous gluconate were determined by administering these preparations as aqueous solutions providing equal amounts of elemental iron per kilogram. The iron solutions were administered by stomach tube to unanesthetized rabbits and to dogs under light anesthesia with pentobarbital sodium. All animals were closely observed for signs of toxicity. Survival times were noted, and autopsies were performed on animals which died. Close observation was made of the degree of gross traumatic changes in gastrointestinal tissues. Serum iron levels were determined by a modification of the method of Peterson.[5] Serum was obtained prior to iron administration and at regular intervals thereafter over a six-hour period.

TABLE 1.—*Hemopoietic Responses to Iron Choline Citrate*

Hospitalized Patients; Therapy: 160 Mg. Iron per day as Iron Choline Citrate

Case No.	Type or Cause of Anemia	Length of Treatment (Days)	Hemoglobin Level (Gm./100 cc.)			Utilization of Iron, %	Erythrocyte Count (Million/Cu.Mm.)			Peak Reticulocyte Response, %
			Before Therapy	End of Therapy	Gain Per Day		Before Therapy	End of Therapy	Gain Per Day (Thousands)	
1	Menstrual	46	7.8	11.3	0.11	13.8	3.05	4.05	33	5.0
2	Hemorrhoids	42	7.2	12.6	0.16	21.2	3.10	4.40	24	6.0
3	Ulcerative colitis	42	6.7	9.0	0.11	9.0	2.40	3.50	29	6.0
4	Ulcerative colitis	39	9.7	10.8	0.04	4.3	3.20	3.90	27	7.0
5	Intestinal polyposis	42	7.9	9.3	0.05	5.5	2.70	3.30	20	4.5
6	Nutritional	46	11.2	13.5	0.08	9.1	3.60	4.70	37	5.0
7	Menstrual	57	9.4	14.1	0.14	18.5	3.40	4.90	43	9.5
8	Hiatus hernia	55	5.2	11.6	0.19	25.1	2.40	4.00	42	14.5
9	Gastric ulcer	39	8.4	12.6	0.16	16.5	3.50	4.70	30	7.5
10	Diverticulosis	60	5.2	12.3	0.18	27.5	2.60	4.20	40	17.0
11	Postpartum	57	7.8	11.1	0.11	13.0	2.70	4.30	53	5.5
12	Peptic ulcer	61	6.9	12.0	0.17	20.0	2.40	4.20	50	11.0
13	Fibroid uterus	32	5.6	11.1	0.18	23.8	2.20	4.00	60	...
14	Postpartum	30	6.4	12.0	0.19	19.2	2.60	4.10	50	...
15	Menstrual	33	6.1	11.7	0.17	22.0	2.50	4.20	52	...
16	Postpartum	34	7.6	13.1	0.16	21.6	3.20	4.30	32	...
17	Nutritional	28	8.0	12.2	0.15	15.5	3.00	4.20	43	...
18	Postpartum	30	5.6	10.2	0.15	15.8	2.41	4.00	53	...
Av., all cases		41.6	6.8	11.4	0.14	16.7	2.80	4.20	38	8.2
Av. 9 cases, initial (Hb. less than 50%)					0.16	20.4			44	
Av. 9 cases, initial (Hb. greater than 50%)					0.11	13.1			32	

Nonhospitalized Patients—Mild Nutritional Anemia; Therapy: 120 Mg. Iron per Day as Iron Choline Citrate

	Length of Treatment (Days)	Av. Hemoglobin Level (Gm./100 cc.)			Av. Utilization of Iron, %
		Before Therapy	After Therapy	Gain Per Day	
Nurses, students and hospital staff (total, 25 Cases)	Av. 84.3 (Range 15-168)	10.6	12.5	0.02	3.1

Results—Therapeutic Response

The administration of 120 mg. of elemental iron per day as iron choline citrate proved to be therapeutically effective in all of the hospitalized patients in this study. Details of the hemopoietic responses in this group are given in table 1 (hospitalized patients). Since hemopoietic responses to oral iron medication depend on duration of therapy and on the initial degree of anemia, both these factors have been considered in derivation of data in this table. All but one of the hospitalized patients underwent treatment for a minimum of one month. Therefore, calculations of (1) hemoglobin gain per day, (2) erythrocyte gain per day, and (3) percentage of iron utilization were based on responses during the first 30 days of therapy. The necessity of expressing calculations of hemopoiesis in terms of a stated number of days of therapy is readily apparent from an examination of figure 1, which illustrates the responses of one typical patient (case 2), who is also considered in table 1 (hospitalized patients). It can be noted that hemoglobin and erythrocyte values rose more rapidly during the first 30 days of therapy than during the latter part of the treatment period, during which normal levels were being approached.

A detailed examination of table 1 (hospitalized patients) shows that in this group of patients whose anemia was primarily due to chronic blood loss the average hemoglobin level was 6.8 Gm. per 100 cc. before therapy and 11.4 Gm. per 100 cc. at the end of therapy. The hemoglobin gain per day (30-day period) for the entire group was 0.14 Gm. per 100 cc. However, the effect of the initial degree of anemia on such calculations is well demonstrated by dividing these patients into two groups. In the more severely anemic patients (initial Hb. less than 50% of normal), the gain per day for 30 days was 0.16 Gm. per 100 cc.; in contrast, the response in the group with a lesser degree of anemia (initial Hb. greater than 50% of normal), was only 0.11 Gm. per 100 cc. per day for the same 30-day period. It is evident from these considerations that quantitative evaluations of hemopoietic responses in terms of gain per day are of little significance unless all circumstances which might effect them are carefully considered.

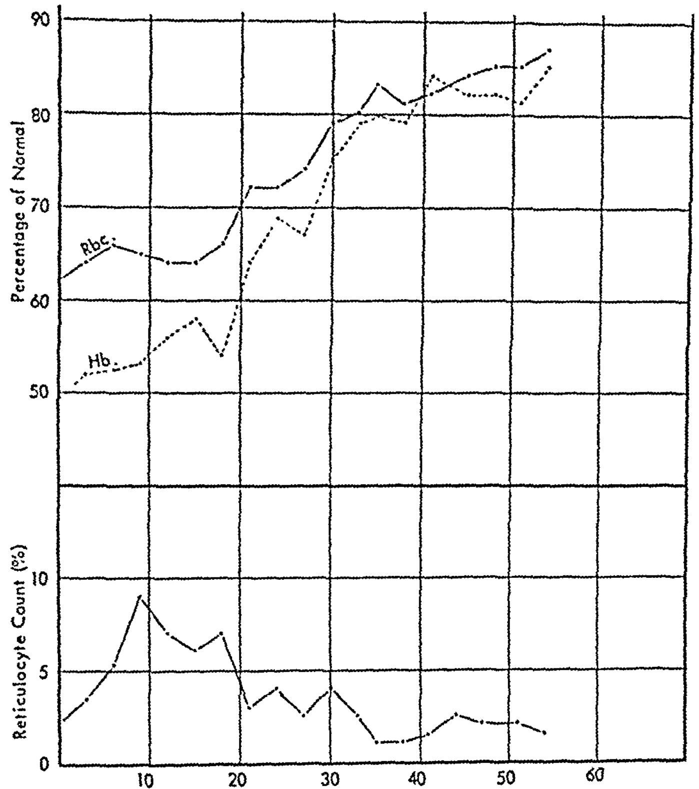

Fig. 1 (case 2, table 1).—*Responses in erythrocyte count, reticulocyte count, and hemoglobin level to therapy with 160 mg. of iron choline citrate in a 61-year-old patient with hypochromic anemia due to bleeding hemorrhoids.*

The effects of initial degree of anemia and duration of treatment on hemopoietic responses are further emphasized by a consideration of the data in table 1 (nonhospitalized patients). In this group of ambulatory patients, the initial degree of anemia was relatively low and the treatment period averaged 84 days. The average hemoglobin gain per day under these circumstances was only 0.02 Gm. per 100 cc. Despite this apparent low level, however, clinical responses, both symptomatically and from a laboratory viewpoint, were entirely satisfactory and were comparable to those previously attained from other iron preparations utilized under similar circumstances.

Table 1 (hospitalized patients) reveals that the erythrocyte response in all the hospitalized patients averaged an increase of 38,000 per cubic millimeter per day (30-day period). The more anemic patients in this group, however, averaged a gain of 44,000 per cubic millimeter per day, while those with an initial anemia of a lesser degree averaged a gain of only 32,000 per cubic millimeter per day. Here, again, the degree of initial anemia obviously affected an expression of erythrocyte response in terms of increase in cells per day.

The percentage utilization of iron, as recorded in table 1, was calculated by multiplying the total gain in hemoglobin (grams per 100 cc.) during the first 30 days by a factor of 50. This product denotes the total increase in grams of hemoglobin, assuming an average blood volume of 5,000 cc. for the adult human. The value for total gain in hemoglobin was multiplied by 0.0033, that fraction of the hemoglobin molecule composed of iron. This final product, representing the total iron incorporated into hemoglobin, was then divided by the total iron given during the 30-day period. The quotient was then expressed as percentage of iron utilized in hemoglobin formation. This figure for percentage utilization of iron does not, therefore, include any iron which entered into formation of nonhemoglobin body constituents or was added to body stores. Although such values for percentage utilization of iron are admittedly subject to error due to assumption of 5,000 cc. as the average adult blood volume, they serve to approximate the degree to which the iron of the chelate complex is utilized for hemoglobin regeneration.

Table 1 (hospitalized patients) shows that the average percentage utilization of iron for hemoglobin synthesis in the hospitalized group (30-day period) was 16.7%. In the more anemic patients in this group the percentage of utilization was 20.4%. In those with the lesser degree of initial anemia the value was 13.1%. These values indicate that the iron of iron choline citrate was utilized in a highly satisfactory manner.

The data in table 1 (nonhospitalized patients) again emphasizes the necessity of considering such factors as the degree of initial anemia and the period of therapy in any quantitative comparisons of iron utilization. These ambulatory patients all had a mild degree of initial anemia. Moreover, the average period of therapy in this group (84 days) was much greater than the 30-day period chosen to calculate iron utilization in the severely anemic patients in table 1 (hospitalized patients). A value of 3.1% iron utilization calculated under such conditions may, at first glance, be misleading. Clinical responses in these mildly anemic patients, treated with minimal dosages of iron choline citrate, were entirely adequate. It is evident from these data that the iron of the chelate complex is readily available for physiological uptake even in those patients in whom the capacity to absorb iron is not accentuated by a marked iron deficiency.

Reticulocyte counts were performed at regular intervals in 12 of the hospitalized patients who received 160 mg. of iron per day as iron choline citrate. All patients showed an adequate reticulocyte response, ranging from 5 to 17%, with an average peak response of 8.2%. There was a rough relationship between the degree of initial anemia and the peak values attained. The maximal reticulocyte response was noted at about the end of the first week of therapy.

TABLE 2.—*Gastrointestinal Intolerance to Iron Choline Citrate*

Cases		Treatment, Amount*	Treatment-Days	Patients with Intolerance		Remarks
No	Type			No	%	
88	Hospitalized	80 mg Fe (t i d)	412	6	6 8	Complaints limited to mild diarrhea, nausea, or constipation, disappearing on continued therapy Discontinuance of medication not required in any case Eight patients were unable to take other forms of iron but tolerated iron choline citrate well
18	Hospitalized	40 mg Fe (q i d)	783	...	...	
25	Non hospitalized	120 mg Fe (single dose)	2,108	...	...	
Totals 131			3,303	6	4 6	

* Iron choline citrate administered at early morning or midafternoon period on empty stomach

Results—Gastrointestinal Toleration

In all of the 131 cases studied (table 2), the iron choline citrate tablets were administered between meals on an empty stomach in order to minimize any effect of food in decreasing untoward gastrointestinal symptoms. Of the 88 hospitalized patients given two iron choline citrate tablets three times daily (total, 240 mg. of iron), only 6 patients evidenced any signs of gastrointestinal distress. Complaints were limited to nausea, diarrhea, or constipation, all of mild degree. All signs and symptoms disappeared with continued therapy. In no case was modification of iron choline citrate dosage necessary. In the group of 18 hospitalized patients given 160 mg. of iron as iron choline citrate daily in four divided doses, there were no instances of gastrointestinal upsets nor were any induced in the group of 25 mildly anemic ambulatory patients who received 120 mg. of iron as iron choline citrate as a single daily dose for periods of continuous therapy up to 168 days.

In this series of 131 patients given iron choline citrate in dosages ranging from 120 to 240 mg. of iron daily for a total of 3,303 treatment days, there were only six patients, (4.6%) who complained of gastrointestinal disturbances of any nature. All these six patients were in that group receiving the maximal dose of iron. Moreover, eight individuals in this study, exclusive of these six, stated that they had been unable to tolerate any other iron preparation, but these eight tolerated iron choline citrate without any discomfort.

Results—Iron Tolerance Studies (Serum Iron)

Figure 2 (*A* and *B*) records a comparison of serum iron levels following test doses of equal amounts of elemental iron as ferrous sulfate and as iron choline citrate, allowing two-week intervals between administration of the two different forms of iron to the same group of normal individuals. These data indicate that the utilization of iron from iron choline citrate is effected in essentially the same manner as is that from ferrous sulfate.

In figure 2 (*C* and *D*) are depicted typical serum iron responses in two different groups of anemic patients given equal amounts of elemental iron in the form of ferrous sulfate and iron choline citrate. It is evident that initial serum iron levels in these anemic patients were significantly lower than those in the normal individuals. However, after the administration of 120 mg. of iron as iron choline citrate, serum iron in the anemic patients rose rapidly. The average increment above control values was 134 mcg. per 100 cc., a value twice that attained in normal individuals receiving the same amount of iron in the form of this same preparation.

These data indicate that the iron of the chelate complex is readily available for uptake by physiological processes and that it will rapidly restore subnormal plasma iron levels to normal. It is significant that maximal serum iron levels after administration of the iron choline citrate did not in any case exceed accepted values for total iron binding capacity and that these levels were somewhat lower than those attained after ferrous sulfate administration. Hemmeler[6] administered an equal amount of iron as ferrous sulfate (120 mg.) to a group of anemic patients and reported maximal serum iron responses higher than those attained in our series. In some cases in Hemmeler's series, maximal serum iron levels rose well above 400 mcg. per 100 cc. These values indicate that maximal iron binding capacities may have been approached or even exceeded in some instances. Such differences between maximal serum iron responses to therapeutic doses of iron as ferrous sulfate and iron choline citrate may possibly be significant when considered in the light of the acute toxicity studies reported below.

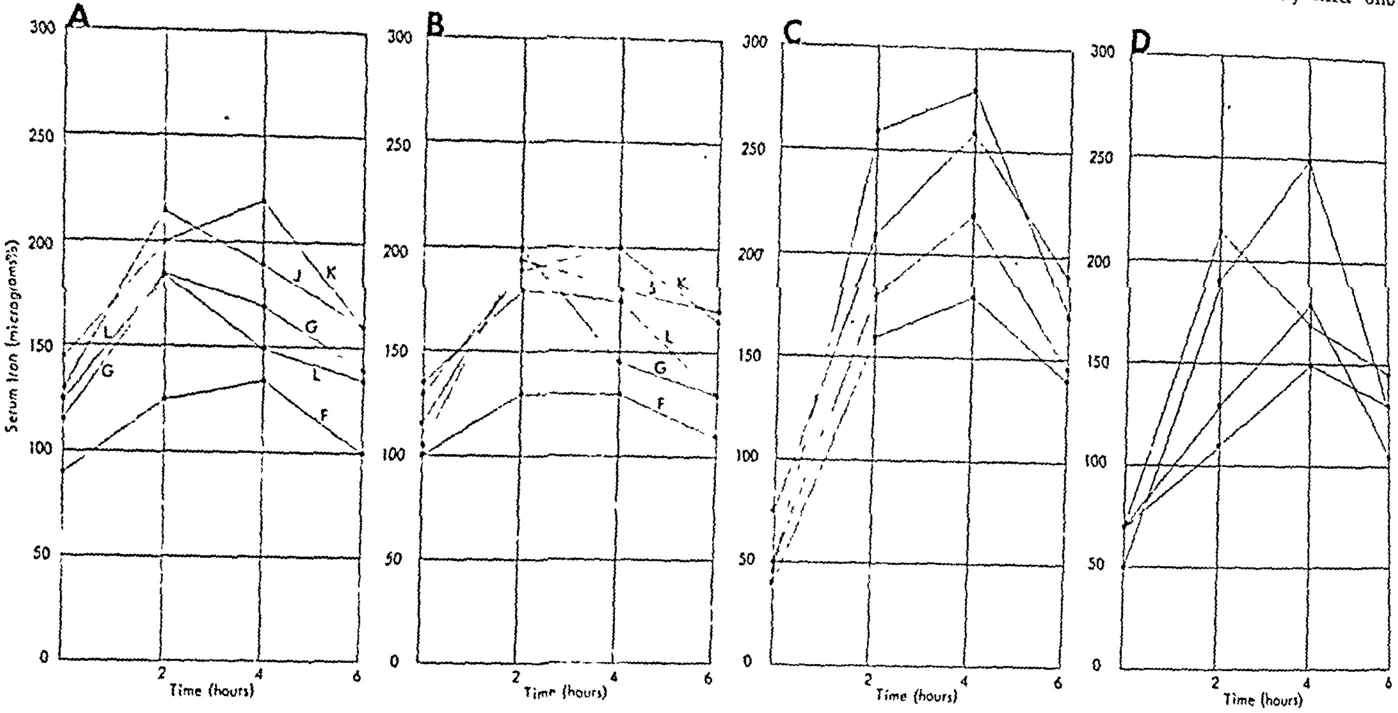

Fig. 2.—*Serum iron responses in humans after administration of equal amounts of elemental iron as ferrous sulfate and as iron choline citrate. A, single dose of 120 mg. as ferrous sulfate administered to normal individuals. B, single dose of 120 mg. as iron choline citrate administered to same persons after two-week interval. C, single dose of 120 mg. as ferrous sulfate administered to patients with iron-deficiency anemia. D, Single dose of 120 mg. as iron choline citrate administered to a separate group of anemic patients.*

Table 3.—*Comparative Acute Iron Toxicity in Experimental Animals*

Dosage (Mg. Iron/Kg. Body Wt.)	Iron Preparations Utilized: Ferrous Sulfate: No. of Animals*	Ferrous Sulfate: Survived: No.	Ferrous Sulfate: Survived: %	Ferrous Gluconate: No. of Animals*	Ferrous Gluconate: Survived: No.	Ferrous Gluconate: Survived: %	Iron Choline Citrate: No. of Animals*	Iron Choline Citrate: Survived: No.	Iron Choline Citrate: Survived: %
100	5(R)	5	100	5(D)	5	100	...	...	...
150	11(5R, 6D)	11	100	2	1	50	...	...	...
200	15(5R, 10D)	5	33	5(D)	0	0	10(5R, 5D)	10	100
250	30(10R, 20D)	0	0	6(D)	0	0	40(10R, 30D)	37	92.5
500	...	...	...	...	...	...	10(5R, 5D)	5	50
1000	..	...	...	...	...	...	5(R)	1	20

*Rabbits (R) Dogs (D).

Results—Toxicity Studies

Table 3 shows that all animals given ferrous gluconate at a level supplying 200 mg. of iron per kilogram of body weight died and, similarly, that all animals receiving 250 mg. of iron per kilogram of body weight as ferrous sulfate died. In contrast, over 90% of those animals given 250 mg. of iron per kilogram of body weight as iron choline citrate survived without evidence of toxicity, either immediate or delayed. Moreover, half of the animals given 500 mg. of iron per kilogram of body weight as iron choline citrate survived, and one animal survived even after administration of 1,000 mg. of iron per kilogram of body weight in the form of this chelate complex.

In those animals which failed to survive after administration of ferrous sulfate and ferrous gluconate, signs of acute toxicity were apparent shortly after administration of the test done. There animals declined rapidly, and death occurred within a few hours. Tables 3 and 4 show that survival percentages and survival times of animals treated with ferrous gluconate were less than in those receiving comparable doses of iron as ferrous sulfate. These data indicate that, under the conditions of this study, the acute toxicity of ferrous gluconate was even greater than that of ferrous sulfate. From table 3 it is evident that the acute toxicity of iron choline citrate is much less than that of ferrous sulfate and ferrous gluconate. In the few animals which failed to survive the administration of 250 mg. as iron choline citrate, signs of toxicity did not appear for a period of several hours after the test dose and survival times greatly exceeded those of animals dying from equal, or even lesser amounts, of iron as ferrous sulfate and ferrous gluconate.

Serum iron levels (table 4), determined at regular intervals after oral administration of ferrous sulfate, ferrous gluconate, and iron choline citrate, reveal that the greater incidence of toxic and fatal reactions in dogs after oral administration of iron as ferrous sulfate and ferrous gluconate was associated with sudden and massive increases in serum iron values. In those animals dying from ferrous sulfate and ferrous gluconate poisoning, serum iron rose to levels which were 50-100 times control values. It is evident from these data that the total iron-binding capacity of the plasma was greatly exceeded within a short period after administration of the test doses of iron. It is further evident from a consideration of table 4 that the lesser incidence of acute toxicity and death after iron choline citrate administration was associated with maintenance of serum iron at relatively low levels, the peak serum iron values in surviving animals reaching levels which were only about five times those of control values. Even in the few animals not surviving after iron choline citrate administration, serum iron levels rose only to values approximately 16 times those of control levels. Maximal serum iron responses and survival periods in these animals were in sharp contrast to those observed in animals dying from the same test doses of iron in the form of ferrous sulfate and ferrous gluconate. These data clearly indicate a positive relationship between the magnitude of serum iron elevation and mortality after iron administration. Postmortem examinations in nonsurviving animals failed to reveal gastrointestinal lesions of sufficient degree to account for the acutely fatal effects.

TABLE 4.—*Serum Iron Levels and Survival Times After Administration of Iron in Dogs*

Iron Preparation Utilized	No. of Dogs	Dosage (Mg. Iron/Kg. Body Wt.)	Serum Iron Levels (Mcg./100 Cc.) Control	1 hr	2 hr	3 hr	4 hr	6 hr	Survival Time, Hr
Ferrous sulfate	1	150	108	1,400	1,661	1,012	940	912	Survived
	1	200	171	2,160	2,390	2,056	1,782	1,422	Survived
	10	250	128* (98 172)	4,688* (3 025-6,720)	6,787* (4,120 9,940)	6,460* (3,940 9,640)	5,434* (3,160 9,106)	3,608* (2,140 7,820)	All died, Av. 8.4
Ferrous gluconate	1	100	187	520	780	800	740	612	Survived
	1	150	137	9,740	16,600		15,850	14,770	Died, 6.5
	1	150	157	330	100	440	440	610	Survived
	1	200	126	2,100	3,240	4,720	7,640	8,200	Died, 7
	1	200	66	3,900	8,400		12,800	13 600	Died, 7
	7	250	140 (78 200)	5,130* (1 720 14,000)	8,411* (2,342 16,200)	12,209* (7,824 16,800)	16,340* (9,640 18,500)	13,140* (11,160 16,000)	All died, Av. 5
Iron choline citrate	10	250	116* (72 172)	230* (204-610)	554* (320-1,180)	773* (468 1,460)	770* (420-1,422)	609* (298 1,200)	All survived
	1	250	172	220	350	1,160	2,125	3,000	Died, 48
	1	250	163	360	640	1,265	1,735	2,570	Died, 72
	2	500	145* (116 174)	296* (270 322)	614* (598-690)	791* (740 842)	815* (766 864)	683* (512 854)	Survived
	1	500	92	640	1,000	1,660	2,720	3,100	Died, 65

* Average values and range

Comment

Therapy of iron deficiency anemia illustrates adequately the axiom, "Where there is a host of remedies, no one of them is completely satisfactory."

Most iron preparations which are hemopoietically effective give rise to troublesome side-effects which limit their clinical usefulness. The literature reflects a high incidence of intolerance to ferrous sulfate, such values varying from 13% as reported by O'Sullivan and his co-workers[7] to one of 50% in a group of pregnant women reported on by Gatenby and Lillie.[8] Adverse symptomatology, therefore, frequently necessitates limitation of therapy or the utilization of parenteral iron with all its inherent hazards.

Data presented in this report indicate that iron choline citrate, a chelated form of iron, possesses outstanding qualities in terms of freedom from undesirable gastrointestinal effects. Those patients manifesting minor degrees of intolerance were all in the hospitalized group, and they received the maximal dose of iron. This low incidence of adverse symptoms is all the more significant in view of the fact that the iron choline citrate was administered between meals on an empty stomach. Moreover, all untoward symptoms promptly cleared despite continued therapy with the chelated iron at the same dosage level.

The treatment of anemia in the patient with peptic ulcer is often a problem. Intolerance to iron often exacerbates ulcer symptoms and retards healing of the lesion. However, four of the patients treated in this study had well-defined peptic ulcers. In none of these was gastrointestinal distress associated with iron choline citrate therapy. Iron utilization and hemopoietic responses were good in spite of the fact that the iron was administered concomitantly with antacids, milk, and a high-protein diet, all of which tend to precipitate iron from solution and to limit its usefulness in ulcer patients.

Chelation is a well-recognized chemical process wherein metallic ions are sequestered and bound into claw-like rings within the chelating molecule. Metals thus bound lose their ordinary properties when they enter into the chelate union. The amount of a given metal which can be taken into solution may be greatly altered, and the metal may resist forces which would precipitate it from solution were it present in an ionic form. One gram of iron choline citrate will dissolve in 0.2 ml. of water, a solubility of 500 Gm. per 100 ml. Moreover, the iron of this chelate will remain in solution at pH values up to 10.2 and in the presence of such natural iron precipitants as protein, phosphates, and carbonates. Dialysis studies reveal that the diffusibility of iron from iron choline citrate is very low in comparison with the iron of ferrous sulfate and ferrous gluconate. These properties may account in part for the effectiveness of the chelate as a therapeutic agent, for its iron may be maintained in solution over a greater area of the gastrointestinal tract, thus permitting an optimal physiological uptake by union with iron acceptors. At the same time, direct diffusion into the circulation may be minimized, even if high concentrations of iron are ingested.

Applications of chelation have been extensive in analytical chemistry and in industry. More recently, uses of chelation have been made in such problems of experimental and clinical medicine as the treatment of heavy metal poisoning, the reversal of hemochromatosis, the dissolution of renal concretions, and the mobilization of atheromatous deposits.

Hemoglobin has long been recognized to be a chelate complex of iron, but only recently has chelation been associated with other phases of iron metabolism. According to Pirzio-Biroli,[9] the uptake of iron by apoferritin, its transport in the plasma by transferrin, and its storage as ferritin utilize processes of chelation to maintain iron in a physiological bound form. It is not surprising, therefore, that the presentation of iron to the system as a chelate complex minimizes those adverse aspects of therapy associated with the use of readily ionizable preparations. The high order of toleration of iron choline citrate, which permits its administration between meals, is a factor of importance in view of the loss of iron known to occur when ordinary iron preparations are given with food.

It is clearly evident that iron can no longer be considered an innocuous substance. Clark[10] states that 1 Gm. of ferrous sulfate is a potentially lethal dose for a child. With the widespread use of iron the problem of accidental poisoning in children is becoming increasingly serious. As in all poisonings, prevention, rather than treatment, is the issue of primary importance. The physician must assume the very real responsibility of warning all patients that iron preparations may be dangerous if allowed to get into the hands of children.

There is no doubt that necrosis of mucosal tissues occurs in cases of iron poisoning in children, for the preparation ingested is usually in tablet form. In this study the iron was administered as an aqueous solution, and, in our opinion, the degree of gross trauma to gastrointestinal tissues was insufficient to account for death of the experimental animals. The data herein indicate a positive relationship between elevation of serum iron level and the fatal effects of the orally administered iron solutions. Markedly elevated serum iron levels developed rapidly despite the presence of a physically intact mucosa.

Although the possibility exists that the relatively low serum iron levels produced by massive doses of the chelated iron may be due to increased rates of disappearance of iron, we are of the opinion that they reflect a lower rate of entrance of this metal into the circulation. Our views are, therefore, in agreement with those of Reissmann and his co-workers[11] that acute iron poisoning must be considered to be a true absorptive intoxication. It is evident from these considerations that greater emphasis must be placed on the systemic aspects of acute iron poisoning, both in terms of prevention of rapid movement of iron into the circulation and in terms of combating the effects of the absorbed iron.

Others have attempted to utilize comparative magnitudes of serum iron elevations to evaluate the relative merits of iron preparations as hematinic agents.[12] In our opinion such comparisons are not completely valid. In this study serum iron responses to single therapeutic doses of iron choline citrate are reported only to establish the physiological availability of the chelated iron. The marked similarity of serum iron responses to ferrous sulfate and iron choline citrate serves to indicate that, at therapeutic levels, the iron of these two preparations is utilized in a comparable manner. Moreover, they show that in anemic patients the availability of iron from the chelate is adequate to meet the increased demands of the body for iron and to restore subnormal serum iron levels to normal. Beyond this point there appears to be no virtue in attempting to increase the rate of iron uptake. In fact, it would appear that any agent capable of producing marked elevations of serum iron at therapeutic levels of intake might be potentially toxic, or even lethal, if accidentally ingested in overdosage.

The chelation of iron permits the formation of a clinically effective and well-tolerated iron preparation for oral administration. Since iron choline citrate also possesses a high factor of safety in terms of prevention of accidental poisoning in children, the physician should welcome the addition of this agent to his therapeutic armamentarium.

Summary

There is an increasing incidence of death in children after accidental ingestion of overdosages of therapeutic iron preparations. In this study, toxic and lethal effects of orally administered iron were related to extreme elevations of serum iron and to a resultant systemic toxicity associated with the presence of unbound iron in body tissues. Passage of iron into the circulation in toxic amounts occurred independently of gross necrosis of mucosal tissue. The chelation of iron minimized its toxicity and provided a high factor of safety against fatal poisoning. Hemopoietic and clinical responses in humans were not impaired by the chelate binding of the iron.

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The iron choline citrate used in these studies was obtained as Ferrolip from Flint, Eaton & Company, Decatur, Ill.

Sincere appreciation is extended to Dr. W. M. Fowler, Department of Medicine, University Hospital, State University of Iowa School of Medicine, Iowa City, Ia., for data regarding non-hospitalized anemic patients described in table 1 of this report.

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WATER REQUIREMENTS FOR MAN.—No single table of water allowances can be set up which will apply in all situations. . . . Under mild desert conditions, with minimum activity, 2 quarts of drinking water per man are needed each day. As the ambient temperature rises or activity increases, the amount of water required by a man per day becomes greater. When the temperature approaches 100 F and soldiers are engaged in strenuous maneuvers, more than 12 quarts of water per day per man may be needed to keep the troops in effective functioning condition. As men become acclimatized to heat their voluntary intake of water increases. Ordinarily, however, this intake replaces only about one half of the water lost by sweat. Thirst is not an adequate index of water requirement in the individual. That dehydration resulting from sweat losses in the heat is truly physiological, can be demonstrated by the improved performance of physical work after men have been forced to drink sufficient water to completely replace sweat losses. The only known method of repairing the damage done to the human machine by dehydration is to replace lost body water. The signs and symptoms associated with simple dehydration disappear rapidly and dramatically when water is drunk.—C. G. Wilber, Ph.D., Water Requirements of Man, *United States Armed Forces Medical Journal,* August, 1957.

J.A.M.A., April 5, 1958

OBSERVATIONS ON SURVIVAL OF PATIENTS TREATED FOR UTERINE CANCER

THIRTY-FOUR YEAR PERIOD (1921-1955)

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Survival is not a synonym for comfort, and the statistics for five-year survivals after treatment for cancer cannot reflect the vicissitudes of the individual patient. A series of 487 cancer patients treated from 1921 through 1947 included a group of 127 with cancer of the cervix, and 77 (60%) of this group are living from 10 to 29 years since the time of treatment. A number of histories are given, particularly that of a woman who died of apoplexy at the age of 86, 32 years after her first treatment with radium for cancer of the cervix. There were long-term survivors irrespective of the techniques of treatment. Similar experiences are recorded for cancer of the corpus uteri, and the histories given include that of a woman living at the age of 87, 32 years after surgery. Granulosa cell tumor of an ovary developed in two patients, 10 years after radium therapy for cervical cancers. Examples of long survival occurred regardless of the grade of malignancy of the tumor or whether treatment had been by radium, surgery, or the two combined.

This is not intended to be a statistical paper. Principally it is a narrative of some of the happenings personally observed in the careers of patients who have survived from 10 to 32 years after treatment for cancer of the uterine cervix and corpus. The span of time involved represents an uninterrupted association with the gynecologic division of Jefferson Medical College Hospital and its uterine cancer follow-up clinic from 1921 until 1955. Before 1940 the work was carried out under the direction of the late Dr. Brooke M. Anspach. From 1940 until 1955, it was under my direction. This paper also represents an attempt to offer conclusions drawn from this experience that might relate to problems of prevention and management of uterine cancer, especially in the light of current research potential.

The data utilized are derived from those patients registered on the gynecologic ward service during the era noted and from my private service. A 10-year survival period has been chosen as an arbitrary base line for this selective survey since the vulnerability of the 5-year criterion, the common yard stick for so-called cured cancer patients, is well known. In 1955 Emge[1] brought to our attention the fact that nearly 1,500 patients with untreated cancer of the corpus, cervix, and ovary, as reported to the California State Tumor Registry between 1942 and 1945, presented five-year survival rates of 40.8, 34.4, and 20.2% respectively. The term survival, however, is not necessarily synonymous with comfort.

Cancer of the Cervix

In 1952 a comprehensive and statistically documented report from the gynecologic ward service appeared in the *American Journal of Obstetrics and Gynecology*[2] as the fifth of a series of "five-year reports" that were instituted in 1931. In substance this exhaustive review presented in adequate detail not only the evolution of irradiation therapy from 1921 to 1946 with respect to progressively improving survival rates, but specific data about 463 patients treated. Of these, 134 had then survived from 5 to 25 years and the follow-up was 98.5%.

This report is referred to because the basic concept of therapy, although modified by three selective periods of changed techniques throughout the time mentioned, has remained basically radiologic. These alterations finally culminated in a "planned type" of therapy that has been followed rather consistently since 1942. After 1949-1950, surgical procedures have played a more conspicuous part, evidenced by postirradiation lymphadenectomy and radical hysterectomy in selected instances. Those interested in these details are referred to the article mentioned above and its extensive bibliography.

The radium applications in both the cervical and corpus cases during the period covered in this presentation have always been the responsibility of the gynecologist, in close cooperation with the radiologist. Likewise the technique of external irradiation has been carried out and supervised by the radiologist in similar cooperative fashion. Arneson[3] discussed this arrangement admirably and objectively in the Carman lecture two years ago.

The comment to follow is derived from a studied appraisal of 127 patients grouped as follows: 1. Seventy-seven (60%) are alive as of this report, having survived from 10 to 29 years after treatment for

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Read before the 11th Clinical Meeting of the American Medical Association, Philadelphia, Dec. 5, 1957.

cancer of the cervix. 2. Fifty-one (40%) eventually died from cancer of the cervix or from some other cause after surviving from 10 to 32 years after treatment. A few patients untraced for more than a year or so past are regarded as deceased pending further information. These 127 patients also represented 26% of 487 cancer patients treated from 1921 through 1947. The ages range from relatively few under 50 years to 38 between 70 and 90, the majority ranging from 50 to 69. A wealth of accumulated data offers material for study and appraisal from many angles, but the confines of this paper permit but a sampling of numerous significant and interesting occurrences.

Speaking in general terms, there were twice as many stage 2 lesions as stage 1, with relatively few stage 3. Histologically, low and intermediate grade lesions predominated, with a paucity of anaplastic growths and adenocarcinomas. In other words these frequencies are in line with our previous statistical experience. As might be anticipated, those surviving or those deceased from other causes responded equally well to any one of the three progressive types of therapy employed. Second primary cancers of the gastrointestinal tract were of the order generally noted.

Individual Survival Periods

Of unusual interest were two patients treated between 1925 and 1930 with radium for cancer of the cervix. Ten years later, a granulosa cell tumor of the left ovary was removed from one patient. Apoplexy was the cause of death when she was 86—a total survival period of 32 years. The second patient was given radium for a cervical stump cancer, and nearly 10 years later a granulosa cell tumor was removed, without evidence of residual cancer of the cervix. A year later, she died of apoplexy at the age of 65—a 13-year survival period.

Another patient had an initial simple total hysterectomy with adnexal removal. Soon thereafter there was a recurrence which yielded to interstitial irradiation and x-ray. She survived for 32 years. Another woman was treated with radium for an anaplastic cancer of the cervix when she was 22. She is still living 29 years later. Another woman is still living 20 years after receiving x-ray therapy for a stage 1 lesion. She refused the routine radium treatment secondarily, but she keeps in touch with the follow-up clinic. One woman received x-ray therapy after drainage of a pyometra with negative curettage twice. Two years later she received radium therapy when follow-up biopsy revealed squamous cell cancer. She died of cardiac disease 23 years later at the age of 86.

A patient with stage 2 stump cancer developed a rectosigmoidal stricture after radium therapy but has lived comfortably with colostomy status for 17 years. She is now partially incapacitated by hemiplegia at the age of 66. A 71-year-old patient with a similar stump cancer has survived 29 years. In one patient, severe and recurrent hematuria two years after radium and x-ray therapy for a stage 1 lesion, and repeated external irradiation for supposed recurrence, necessitated over 50 transfusions in over a decade. In the 16th year of this patient's survival, symptoms of cerebral instability appeared, and operation disclosed a metastatic brain lesion identical histologically with the original biopsy. The patient died at 60 years of age. A woman with a stage 3 lesion of marked extent was treated with x-ray and radium. At the time of writing, 15 years after treatment, there is no evidence of active disease.

Thirteen years after treatment of a stage 2 lesion with no evidence of recurrence, a patient neglected a sore in the buccal cavity. Her condition is rapidly deteriorating in spite of extensive irradiation therapy. Eleven years after treatment for a stage 2 lesion, a 63-year-old patient developed bladder trouble suddenly, and death occurred within a brief time from extensive necrosis and gangrene of the bladder with advanced pyelonephrosis and destructive ureteritis as revealed at autopsy. A patient with a stage 2 cervical stump treated with radium survived 14 years before she died of pulmonary tuberculosis and cardiac disease. Another patient with a similar lesion and treatment died 11 years later of lung cancer, which was thought at autopsy to be a second primary lesion.

Three patients with stage 1, 2, and 3 stump lesions treated with radium and x-ray survived 12, 10, and 12 years respectively. All died of recurrence. A 52-year-old patient with procidentia had a stage 1 lesion which responded well to x-ray and radium therapy. Shrinkage and retraction of the uterus occurred and two years later the uterus, adnexa, and a fair amount of parametrium were removed and found free of cancer. The vaginal vault was slow in healing because of necrobiosis. She has survived for 14 years and remains in good health.

Gradation of tumor has shown no specific relation to therapeutic response or survival time. In general, these long-term survivors have experienced varying degrees of discomfort from irradiation therapy, but only one developed a rectovaginal fistula. This is a selective but happier story than that reported in the 1952 statistical report, when the general incidence of irradiation damage—proctitis, sigmoiditis, cystitis, and fistula—increased notably with the use of local and heavier external irradiation techniques used after 1942. Rectovaginal and vesicovaginal fistula in that report were 4.1 and 4.7% respectively.

Stage 1 lesions are being seen more frequently, but stage 2 continue to be nearly twice as frequent. Few patients with stage 3 lesions survived for long periods. No case of carcinoma in situ was observed in this review. The grade of the lesion has been of no prognostic significance. A biopsy specimen has sometimes revealed varying areas of gradation.

The fact that there were long-term survivors irrespective of the various techniques of treatment used would seem to indicate that the degree of radiosensitivity is more of a deciding factor than technical details, but radiosensitivity is not necessarily compatible with radiocurability. Deaths from late recurrence or unarrested disease occurring as long as 12 to 16 years after diagnosis lead to the belief that modified panhysterectomy and adnexal removal should be carried out more frequently after a satisfactory irradiation result has been achieved. Removal of tributary lymph nodes in such instances should not be attempted because of the risk of releasing residual cancer cells imprisoned by postirradiation fibrosis.

Heavier and more intensive irradiation therapy exacts its toll of discomfort, complications, and death in a minority of patients with stage 1 and 2 cancer. Long-time survival is rare among those with stage 3 cancer, and it would seem wise and humane to administer only limited irradiation to such people. "Palliative" irradiation in a patient with stage 4 is indeed a doubtful blessing. The absence of radical surgery among the long-term survivors in this presentation might serve for comparison with a similarly followed group of long-term survivors after radical hysterectomy and lymph node excision.

Cancer of the Corpus

Beginning in 1934, quite a number of formal reports[4] regarding diagnosis and management of corpus cancer were issued by the gynecologic division. This statistically documented evaluation related to ward patients and those on the private service of Dr. Anspach and various departmental colleagues, and those seen by me. Reference to precise data regarding these findings can be found in the bibliographies of the specific references just noted.

Immediate surgery was employed freely in seemingly early cases, but, as with cervical cancer, radium and x-ray were relied upon in advanced cases and in obese women or those in whom we had first recognized the "corpus cancer syndrome" 25 years ago! This was also true of the elderly woman with surgical risk problems. When an increasing number of surgically treated patients were seen relatively soon thereafter with metastatic or recurrent cancer in the vaginal vault and vagina, a precise review stressing tumor gradation and associated factors led to the plan of primary treatment of the corpus with radium six to eight weeks prior to surgery. That is how the method of "planned therapy" for corpus cancer came about. No routine removal of lymph nodes was practiced and no postoperative x-ray was used unless objective findings warranted exposing the intestinal tract to irradiation effects. Accompanying myomas of various types or other contraindicating factors do not always permit radium placement, and then postoperative irradiation becomes optional.

Comments that follow stem from personal association with 55 patients grouped thus: 1. Forty-one (less than 75%) are presently alive, having survived from 10 to 32 years after treatment for cancer of the corpus. 2. Fourteen (more than 25%) are dead from causes other than cancer or are presently lost to follow-up but were still free of recurrence several years ago.

An 87-year-old patient has survived 32 years after surgery for a low grade lesion. Another woman had radium and x-ray therapy four years subsequent to surgery and then more x-ray for an intermediate grade lesion. She survived 19 years before she died of a second primary cancer of the lung at 56 years of age. Two patients with high grade (anaplastic) lesions were treated 20 and 22 years ago with radium and x-ray, and radium alone. Test curettage several years later was negative in each. The first patient is now 57 years old and has remained entirely well. The second patient is now 62 years old and has had repeated bouts of hematuria incidental to late irradiation damage, with complicating myocardial insufficiency.

A patient treated with radium and subsequent surgery 19 years ago, without residual endometrial tumor (low grade), recently underwent a segmental lung resection because of a suggestive x-ray, but the pathological report was chronic pneumonitis. Seventeen years ago, a then 60-year-old woman survived two postoperative pulmonary emboli after radium treatment and subsequent surgery for an intermediate grade lesion; no residual tumor was present. A 77-year-old patient received radium for an intermediate grade lesion and survived 13 years, dying of cardiac disease at the age of 90. An excessively obese patient is still living 15 years after receiving repeated radium applications within a month for a low grade lesion.

A woman of 80 has survived 16 years after x-ray and radium therapy and surgery for a low grade lesion with attenuated residual tumor. Another woman had an operation 15 years ago for concomitant endometrial and ovarian cancer. The preoperative diagnosis was multiple fibroids and it was impossible to state accurately which of the two cancers was primary. She is now 67 years old and has been a diabetic for several years. A patient with paralysis agitans was given radium therapy for an intermediate grade lesion in 1943. Four years later she was treated elsewhere for enterocolitis, but there was no improvement. She returned for a pelvic recheck. An enlarged corpus and occluded cervix suggested residual tumor mass, pyometra, and chronic intestinal obstruction. Diagnosis was confirmed at surgery with adequate removal of all pelvic organs. She is still living 14 years later at the age of 75. A patient had radium therapy and surgery for an intermediate grade lesion attenuated by the radium and was well for five years when a second primary malignancy of the upper jaw developed. She was responsive to surgery and irradiation at 75 years of age and has survived these combined lesions 13 years to date

A 53-year-old woman with excessive hypertension had required colostomy some years previously due to ill-advised surgery for pelvic inflammatory disease. She was given radium therapy for a low grade lesion in 1946 and is still well 11 years later at the age of 64. An 82-year-old woman ha survived 13 years after local interstitial radium and externa irradiation therapy for recurrence of a lesion in the vagina vault after primary hysterectomy for an intermediate lesion A woman developed a postoperative hernia after radium therapy and surgery for an intermediate grade lesion. A small granulosa cell tumor was found in an ovary. She is still living 10 years later at the age of 69. The single adenocarcinoma in the series occurred in a 51-year-old patient. She was treated with radium. At surgery, residual disease in the corpus and a metastatic lesion in one ovary were found. She is still well 13 years later.

It is evident from these cases that group-wise we are dealing with a preponderance of elderly women. Also that there was great opportunity for survival unless the patient had been too long neglected. Although there has been a steady increase in cancer incidence generally, there has also been a progressive increase in longevity rates, which go hand in hand with the rising population curve.

The patients reviewed, with few exceptions, did not deviate from the generally recognized corpus cancer pattern and age bracket. Tumor gradation was impartial with respect to long-term survival. Low and intermediate grades were equal in number (24); there were 5 high grade lesions. Long-term survivals occurred in this group when treated with radium alone or in combination with external irradiation, and with primary surgery in several instances where cancer had not been diagnosed preoperatively.

Residual tumor after intracavitary radium plus surgery was present in 21 long-term survivors (55%), and absent in 16 (45%). Presence or absence of residual tumor, often attenuated, was equally divided as far as the gradation of the tumor itself was concerned. Thus one-half of the long-term survivors were managed successfully by this "planned" method of treatment, even with residual tumor present as noted. When there is a high index of suspicion because of postmenopausal bleeding and suggestive cytology, intracavitary radium sources have been introduced pending a four-hour permanent section report of the curettage. If the lesion is benign, the radium has been removed immediately; otherwise, cancerocidal dosage is estimated. Surgery should be the ultimate goal in corpus cancer therapy. If definitely contraindicated by a valid reason, intracavitary radium, alone or in combination with external irradiation, can be used to advantage as has been noted in certain of the long-term survivors.

Conclusions

Perseverance in the follow-up of treated cancer patients over a long period is necessary if an exact survival period is to be ascertained in contradistinction to commonly expressed survival rates. The "five-year cure" as a criterion in the results of treatment for uterine cancer is a fallacy.

In the final analysis, the clinician's problem still remains threefold—prophylaxis, detection, management—and the uterus is a favored site for positive and definitive action. Prophylaxis can be practiced in spite of varied and sometimes contradictory concepts of etiology and pathogenesis. The abnormal cervix can be managed with certainty, and atypical endometrial activity is readily subject to investigation.

The uterine cell test of Papanicolaou skillfully utilized can furnish prompt and valuable diagnostic leads from all areas of the uterus—and even from the adnexa at times. Subsequent critical evaluation and/or substantiation of positive or suggestive smears is mandatory by the discipline of cervical biopsies of various types and fractional uterine curettage. No wonder Paul Younge[5] entitled a pertinent article "Cancer of the Uterine Cervix—a Preventable Disease," based on his wide and judicious experience, conservatively applied to the life history of noninvasive malignant epithelium of the cervix, known as that frequently controversial lesion, carcinoma in situ.

The heated poker, used decades ago for the destruction of exuberant cervical growths, gave way to Paquelin's thermocautery, which Emmet used in the 1880's. Then came the heavy-duty cautery, employed by many of us to correct abnormal cervices prophylactically even before routine cervical biopsies and endothermic resections became the mode in addition to curettage. How many noninvasive lesions must have been destroyed thereby![6]

With increasing knowledge of the "corpus cancer type," it would seem logical to investigate such patients, in the course of routine and periodical examinations that include the uterine cell test, by utilizing the endometrial aspiration technique in addition to vaginal and cervical smears. This prophylactic measure might well apply to the diabetic, obese, and hypertensive patient as well. The presence of fibroids, especially if symptomatic, calls for inquisitive vigilance lest an accompanying endometrial cancer be overlooked.

There is nought on the horizon at present to indicate that any form of chemotherapy can replace present methods for the primary treatment of uterine cancer. Prophylaxis and prompt detection become the joint responsibility of every woman and her physician.

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HEALTH SERVICES SCHOOL-AGE CHILDREN NEED

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Realistically conceived health services for older children will focus attention on all the health needs typical of this age period, utilizing up-to-date medical practices. Acute illnesses and serious diseases have their lowest incidence during the school years. The physician's challenge is the detection of any unrecognized illness so that the child may benefit from medical treatment before a real handicap develops. Health appraisals are wasted unless there is some follow-through on recommendations for treatment. Continuity of health services, obtained best by periodic visits to the child's own physician, is always necessary.

The most notable accomplishments in pediatrics have been in the care of infants and young children. There are many reasons for this. The health problems in early life, appearing to be more serious, have received the most attention; parents need advice about young children frequently, and thus for them the parent-doctor relationship is more firmly established; and physicians by their training and experience feel confident in dealing with infants and toddlers.

Since World War II the health of the school-age child has been given more and more consideration. A number of factors have combined to stimulate interest in the health of older children, the outstanding ones being advances in the medical care of the preschool-age group, increased emphasis on preventive medicine, the discouraging health conditions revealed by physical examinations of candidates for military service in World War II, mounting interest in improving physical fitness, and the modern educator's broader concept of the school's function in bringing the whole child to his fullest possible development in areas of his health, his personality, and his emotions, as well as in his academic skills.

Health programs in schools are certainly not an innovation, but until recently they have usually consisted of "line-up" inspections or brief examinations done in the schools. The principal emphasis has been on communicable diseases, posture (particularly flat feet), and whether the tonsils appear enlarged. This kind of health service has discovered few of the important health problems of these children, and little has ever been done about following up the medical recommendations.

From the older notion that health services in schools should principally be mass physical examinations there is now a change toward the opinion that the child's own physician, who knows his history and his family and can institute treatment promptly when indications are found, should whenever possible provide the major part of health services in close cooperation with the school authorities. Although it is universally recognized that a child's parents have the primary responsibility for his health, certain health services, such as provision for first aid and emergency measures, first-hand observation of children's behavior, health education, and assistance in encouraging children to obtain recommended medical attention, will always be necessary in the school. As the school-age population increases and knowledge of needed health services for this group grows, it is inevitable that practicing physicians will be called on more and more often to perform periodic health appraisals, to assist in solving scholastic problems, and to advise about behavior disorders. There is no question about the advantages of a personal interview and physical examination in the office of a physician who is a good doctor and a good listener, compared with the results of screening programs based on laboratory tests and hurried examinations.

Essential Health Services

What are the essential health services for school-age children? Realistically conceived health services for older children will focus attention on all the health needs typical of this age period, utilizing up-to-date medical practices. There is no problem in taking care of the specific complaints in this age group—the acute illnesses and the more or less chronic but familiar disorders which are not different from those of younger children or adults. It is on this basis that physicians have become accustomed to caring for the health of older children. Most would have to agree with Crothers' chiding statement: "Pediatricians will have to admit that they accept the general thesis that all children who are not ill are identical with all equally healthy children of the same age and sex."[1]

Acute illnesses and serious diseases have their lowest incidence during the school years. By this criterion there is little need for health services at this period of life. However, experience has shown that obvious need is not a sound basis for planning health services for this age group. The real health problems of the school-age child today do not threaten his life or send him to the hospital and seldom cause absence from school. Health im-

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pairments which can interfere with growth development and education may not produce symptoms sufficient to cause the child or his parents to think of seeking medical attention. Thus, periodic examinations at least every three or four years are advisable in addition to medical attention when specific problems arise.

Unquestionably, it is more difficult to examine an individual for a routine health appraisal than for a specific complaint. Here is the opportunity for physicians to develop the meaningful health services which schools have tried ineffectually to provide in the past.

There are many opportunities for preventive medicine in caring for school-age children. The scope of preventive medical services is increased by thinking of these services as primary, or those which prevent illness, and secondary, or those which limit the further progression of disease already present.

The most significant primary preventive measure is immunization against contagious diseases, and this is essential, regardless of age, during childhood. Normally, or perhaps ideally, the initial or basic series of conventional immunizations would have been administered years before entrance to school, and stimulating or booster doses only would be required during school years. Children who have not already been immunized should be protected at once against smallpox, diphtheria, pertussis, tetanus, and poliomyelitis. If the child has had the basic series during his preschool period, a stimulating immunization against smallpox, diphtheria, tetanus, and pertussis should be given on entrance to school and, except for pertussis, every three years thereafter. As yet, there has been no recommendation for additional boosters of poliomyelitis vaccine after the third dose, which is usually given seven months after the two primary inoculations.

There are other preventive measures of cardinal importance to children of school age. Dental caries affects about 90% of the school-age population. Tooth decay is so universal that ordinarily it is more reasonable for the physician to refer children to their dentist for semiannual examinations than to decide himself whether treatment is necessary. Caries that can be seen could have been detected earlier by dental x-rays and treated. However, in that important part of medical services, health counseling, topical applications of sodium fluoride should be advised in any community that does not obtain a sufficient amount through its water supply.

Even during school years attention to nutrition is important. A proper diet and supplementary vitamins are as essential to growth and development throughout the school years as in infancy. The nutritional problem of obesity is often more frequent than undernutrition, and treatment requires more medical acumen and counseling than in the latter condition.

Rheumatic fever is considered to be uncommon, but still about 1% of school-age children have clinical evidence of rheumatic heart disease. This is a disease that can be prevented by adequate treatment of streptococcic respiratory disease.

The Role of the Physician

Broad interpretation of the scope of preventive medicine implies the importance of early detection and treatment of illnesses which would result in permanent impairment if permitted to progress. Effective preventive measures of this sort require prompt recognition of health disorders so that corrective measures may be taken while disability is still minimal. The physician's challenge is the detection of any unrecognized illness so that the child may benefit from medical treatment before a real handicap develops. There are millions of children in this country with defective vision, impaired hearing, imperfect speech, and nutritional disease which could be corrected before health or school work suffers. Many times symptoms are present but may not be mentioned because children and their parents are not aware of their significance. Furthermore, there are additional thousands of children who have obvious handicaps but for whom no adequate treatment has ever been suggested. Thus, children with cerebral palsy, epilepsy, birth injuries, orthopedic disorders, skin diseases, and congenital heart disease can be helped to attain optimum health by medical advice.

Physical disorders are not the only ones which are responsive to treatment in the early stages. The physician who is alert to the varied problems of school-age children can usually detect or elicit symptoms of emotional or scholastic difficulties before they become sufficiently advanced to cause lasting effects. The older child's physician should also be mindful of those seemingly trivial disorders which often bother youthful patients excessively and, by adult standards, unjustifiably. Thus a physician's recognition and sympathetic discussion of acne, unusually late or early maturation, obesity, marked deviation in height, or even malocclusion of the teeth will often lead to treatment of a condition that otherwise might never be mentioned, and certainly the child's understanding and acceptance of the condition will be improved by his doctor's interest. An adolescent typically wants to be just like other boys or girls of the same age, and variations which are not really significant in a medical sense are very important to them, often becoming a source of anxiety which can be dispelled by explanation or by treatment if indicated.

Physical fitness of the youth of the United States is a subject of considerable interest and discussion at the present time. As usually interpreted by nonmedical persons, physical fitness means physical perfection, maximum strength and suppleness, and vast endurance. In what seems a more realistic understanding of physical fitness, there is implied an individual's optimum ability to perform the tasks which are necessary for him. In other words, fitness is the achievement of one's own potentiality. Thus a child with an obvious or severe physical handicap can still achieve physical fitness if maximum efficiency is developed for tasks reasonably within the child's capabilities. It is not unusual for physicians to be called on to certify children for athletic competition. Appraisal of the capabilities and fitness of every child for his scholastic tasks, for competitive play with other children, and for carrying out the everyday activities of all children is equally important. Every child should be thoughtfully considered with regard to his fitness for peak performance within his limitations.

Health appraisals are wasted unless there is some follow-through on recommendations for treatment. There is no benefit in knowing which children may be expected to grow up with physical or psychological handicaps unless this knowledge is utilized at once to improve the situation. It is generally believed that one or both parents should be present when children under the age of 14 years are examined. It is natural for adolescent children to prefer being on their own, and they are usually more cooperative when granted this independence in getting medical attention. They want independence from their parents as well as the status with their peers that this self-sufficiency can bring. In either case it is the responsibility of the physician to explain carefully any health problem which has been discovered, to help in planning ways to secure the recommended medical care, and to check at a later date to see whether some action has been taken. In the case of younger children this will be accomplished directly with the parent. With adolescent children the initial explanations and recommendations should be made to the child with the understanding that the parents will be notified. Parents should be brought into planning immediately if the child wishes and certainly at a later date if no follow-up action is taken.

One of the chief advantages of having the child's own physician assume responsibility for periodic examinations is that the chances of having recommendations carried out are considerably improved when the problem can be seen by the parent and explained by the physician and when plans for treatment can be discussed.[2]

The Role of the School

What can schools do to help in health services? With the interest that today's teachers have in the health and welfare of their pupils, providing effective health services for school-age children can best be a cooperative undertaking involving parents, physicians, and school personnel. With young children, the "team" consists of physician and parents; this is especially so because of the acute or primarily medical nature of health problems in the younger age group. Older children are not family-centered, and there are people in the schools and other organizations in the community who can contribute to health supervision; they too need to understand the health status of the children with whom they associate. Teachers can assist by always being attentive to symptoms suggestive of ill health. In reality, teachers during many hours of the day are "proxy parents" and can give valuable assistance in early detection of illness.

School nurses or specially trained teachers can also perform an important function by carrying out some screening tests for visual and hearing acuity, since these procedures can usually be done more efficiently at school than in a physician's office. However, the selection of tests and the manner in which they are given should be the responsibility of the medical profession in each community.

Good health services for school-age children require teamwork, and this means good communication between physicians, parents, and school personnel.[3] Even though a child comes alone to the physician, he cannot be separated from his family and the community. Parents should be advised concerning the state of the child's health, what needs to be done, and the reasons for treatment. Teachers need to know when the child's physical condition may be expected to affect his school program. This subject always brings up questions about the amount of "privileged information" which can be transmitted by a physician. Teachers and nurses today are much better prepared in their professional education to deal with confidential information, but, when a physician has any question about the propriety of making specific information known, he should proceed on the basis that facts are not as important to school personnel as is the advice that, for medical reasons, a child who has specified physical or emotional limitations should be seen by his physician at prescribed intervals and should have a modified program of activity.

Conclusions

Continuity of health services is always necessary. The child's physician, who will be called on with increasing frequency for medical examinations, advice, and treatment, will always be the connecting link between medical services, the child's family, and the community organizations, of which the school is the most important. This is a role physicians should welcome, for it improves on the older concept of overly developed health services in the schools. However, this responsibility cannot be met without an understanding of the physical and emotional problems of school-age children.

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COMPETITIVE ATHLETICS FOR PRE-TEEN-AGE CHILDREN

A CHALLENGE TO PHYSICIANS

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Opinions differ as to the intensity of competition that should be allowed to develop in athletics for children under the age of 13. A child induced to participate in highly competitive sports that imitate adult patterns is subjected to severe physical and emotional strains, and these sometimes profoundly affect his subsequent physical growth and social development. Especially in interscholastic and intercommunity championship games, with uniforms, parades, prizes, and publicity, and with the possibility of vicarious glorification of parent and school, the psychological responses of all concerned can be abnormal in many ways. In the case here described a boy managed to conceal from parents and coach a week-old subluxation of the first cervical vertebra as well as an older, partially healed fracture of the seventh cervical vertebra. Competition must be recognized as normal and desirable in growing children, but it must be kept within bounds. Eleven recommendations are here made as a means of giving pre-teen-agers most of the advantages and a minimum of disadvantages in athletic programs.

The concept of the "total child" is an accepted philosophy in the practice of pediatrics. The medical adviser today cannot be satisfied merely with the child's being well; he must be concerned with the well-being of the child. The physician is no longer merely a dispenser of health services; he is also an educator in health for his young patients and for their parents. Health education and health service start in the nursery. When the child enters school the physician surrenders none of his responsibility. Instead, he and the parents are joined by the classroom teacher, the school nurse, and other school health personnel in a continuing program of health education and health supervision. Ideally, the physician enlarges his area of influence to become a health adviser to the educators, while at the same time he learns some of their problems of education so that teacher and physician can work as a team in maintaining and improving the health of children.[1] As the child's spheres of interest develop, his community activities claim the attention of the physician with the added responsibility of serving as a medical adviser in community recreational and sports projects. The literature contains many excellent reports and studies to guide the physician in this broad area.[2]

Need for Athletic Play

Nowhere is the need for medical guidance and cooperation greater than in the problems connected with the participation of children in competitive athletics. Everyone agrees that competition is essential in the growth and development of children into well-balanced, responsible adults. But there is a distinct difference of opinion as to the level and intensity of competition in which children should engage at the various stages of their development. The most vehement arguments center on the question of athletic competition for children under 13 years of age. Unfortunately, much of the argument has been on an emotional rather than an intellectual basis. While the lines have not been too clearly drawn, on one side are those who, while believing thoroughly in competition, would place certain limitations on the intensity and scope of competitive athletics for young children; in this group are the majority of educators and physicians who have studied the issue. On the other side are those who maintain that highly organized, highly competitive, "varsity-type" athletics are a desirable activity for children in their early school years; this group consists largely of sports promoters, professional athletes, sports fans, and some coaches. Between the two groups are the parents. Some, with a natural ambition to develop an athletic star in the family, are drawn to the side of highly organized pressure programs of athletics; others, concerned primarily with the safety of their children, move toward the opposite camp.

Children's athletic programs can be classified into four groups: (1) those that are a part of the regular school curriculum; (2) those outside the school curriculum but a part of community recreation programs; (3) those organized under independent, special interests related to specific sports or to specific sponsors; and (4) unorganized, pick-up activities, such as "sandlot" and "scrub" games. While athletic programs in schools are more easily regulated, the essential problems of juvenile athletic competition are common to all types of programs. The problems are most apparent in the third, and most rapidly growing group. For example, one of these, Little League Baseball, has a

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membership of over 750,000 children. About 4,000 Little League baseball games are played every day within the specified season.[3]

Arguments for Competitive Athletics

In considering the arguments for and against highly organized, high-pressure competitive athletics in or out of school, it must be remembered that the problem is here limited to children under 13 years of age. The proponents commonly maintain the following arguments: 1. Competition as a part of life must be taught to children during their formative years, and a highly organized program of intercommunity or interscholastic competitive athletics, patterned after that of older groups, is an essential means of doing this. 2. Physical injuries and emotional disturbances sustained in such a program can be insignificant with intelligent adult supervision of the program. 3. Children engaged in competitive athletics are more physically fit, more poised, more relaxed, more confident, and in general superior both as children and as adults to those whose athletic activities are noncompetitive. 4. Children of all ages will instinctively engage in competitive athletic activity, especially in body contact play, such as boxing, "wrastling," and bare-hand fighting, with no holds barred, and to minimize the dangers of such activities, it is better for adults to organize and direct them. 5. Competitive athletics at this age can act as a feeder program to college and professional sports. 6. Competitive athletic programs promote good public relations for the school and for the community.

Before stating the answers that most parents, educators, and physicians would give to these statements, it would be well to define what is meant by highly organized, highly competitive athletics. This includes sports which are played by teams that have been developed through a series of elimination games and which represent a school or a community in championship schedules of interschool, intercommunity, regional, or national games or tournaments. The reverse of this system consists of many teams in a sport or game, involving many children in a school or community, with athletic activity confined to the school or to the community. Highly competitive athletics has been defined by the school health committee of the American Academy of Pediatrics[4] as competition in which the chief stress is placed on winning, with excessive emotional pressures applied by teachers, parents, and others, and with parental interest going to the point of expressing undue concern over winning.

In reviewing the work reported in the literature, one is impressed by the number of writers who group all sports in the same category. The same criteria for avoiding injury, exhaustion, and abnormal bone and muscle growth cannot be applied equally to body-contact and non-body-contact games, nor can they be transferred without modification from any one sport to another. This, together with a failure to designate clearly the age group under discussion, has led to much unnecessary misunderstanding and argument. Such a lack of definitiveness is difficult to avoid because of the limitations of time and space. One is also impressed by the number of studies in which medical problems are investigated by students without a medical background. Many of these studies could be improved through medical consultation and cooperation. This is not so much a criticism of the researchers as it is a pointed suggestion that more physicians should be interested in making such studies. With these points in mind, let us consider the arguments of the proponents.

"Competition is a Part of Life"

No informed person will deny that competition is an essential part of every child's education and growth. But it is equally true that competitive drives must be allowed to develop normally and not be overstimulated or suppressed, so that as the child matures competition and cooperation are balanced forces in his personality. A child can best be developed in respect to posture, coordination, strength and control, and emotional balance by a process of gradual training during the years of physiological immaturity, not by the forced development of special skills.[5] B. L. Johnson[6] of Fresno State College, in an experiment on exercise with 59 junior high school boys, found that they worked harder when put under competitive conditions but that their output was not significantly greater than the boys who were not so motivated. In fact, the added stimulus sometimes reduced the achievement. The competitive group, moreover, showed a slower recovery from heart and blood vessel strain than did the control group. In addition, nausea developed in 37% of the subjects in the motivated group either during the exercise or during the period of recovery, but only one case of nausea occurred in the group not under conditions of competition. An extensive study of Cleveland junior high school boys by Rowe[7] showed that a group competing in highly competitive interscholastic athletics did not gain as much in height, weight, and lung capacity as did a comparable group of boys in the same school who were participating in a good program of physical education and intramural athletics.

Physicians least of all want to eliminate competition from the lives of boys and girls. Physicians are not afraid of children being hurt physically or emotionally if the end-result is one that is of benefit to the child. It is done deliberately when their systems are subjected to vaccines and toxoids and when they are allowed to extricate themselves from emotional or social stresses in which they have become involved and which are not beyond their emotional maturity to cope with. But if they are to suffer such insults, these insults should be of the kind that will strengthen them, not those that will permanently harm them.[8] Johnson's study suggests that the stress of strong competition does not improve skills or promote an increased capacity for performance. At times it seems to have an opposite effect, but more investigation under controlled conditions is necessary to clarify this. Until such studies have been made, one must doubt the claim that the stress of competition promotes optimum growth and development. The preponderance of opinion is in favor of limiting competition in prepubescent youth to intramural sports programs.[9]

"Injuries Can Be Insignificant"

The statement, "Injuries can be insignificant with adequate and intelligent adult supervision," contains a number of fallacies. Preadolescent and adolescent children are in a vulnerable age. During this age there are periods of rapid growth, with temporary maladjustments and weaknesses. For example, bone growth at this age is more rapid than muscle development, so that temporarily the bones and joints lack the normal protection of covering muscles and supporting tendons. During these periods, the child is particularly susceptible to dislocations of joints and to bone injuries, especially to the epiphyses. There are injuries which can cause permanent damage and can interfere with normal growth. Dr. C. L. Lowman [10] polled about 400 orthopedists on this point. About 75% of them agreed with a statement made by the state directors of health, physical education, and recreation to the effect that interscholastic athletic competition was not good for young adolescents and that body-contact sports should be eliminated. Most of the other 25% qualified their answers so as practically to rule out this type of athletics as it is now being practiced. Fait,[11] on the other hand, reported that he had surveyed the opinion of a group of orthopedic surgeons and found that only 14% believed that junior high school students were so susceptible to epiphysial injuries that the physical education and athletic programs for this group should differ drastically from the activities offered in the high school program. However, his question was so phrased that the physicians questioned were required to state whether they thought these sports should be modified for younger children. This is really a nonmedical decision on which it is difficult for the physician to give an authoritative opinion.

Violent and sustained exercise and the bruising and fatiguing activities of strenuous competition are believed by many authorities to throw a damaging overload on the immature heart, lungs, or kidneys. Often the damage is not evident at the time but manifests itself weeks or even years later.[12] Evidence to the contrary that I have found in the literature is not well controlled and is not impressive.

Another type of damage is more subtle. In developing skill in a particular sport, the child develops some sets of muscles more than others. As a general rule, strenuous athletics tends to strengthen flexor muscles at the expense of extensor muscles. This leads to a shift in stress and weight bearing, which in turn affects the development of the bones to which the muscles are attached. These abnormal changes in bones occur according to what is well known to physicians as Wolff's law (a bone changes its internal architecture and external shape according to the way in which the weight is borne or the stress is applied; in other words, all changes in the function of a bone are attended by definite alterations in its internal structure). The end-result can well be poor posture which in turn may result in a skeletally malaligned individual.

Foster [13] reports 14 cases in which fractures occurred among high school athletes but in which the diagnosis was not made until x-rays revealed that such an injury had occurred. Many of these fractures had been concealed by players because of the feeling that they might be accused of being "sissies" by their coaches or fellow players. Most of the fractures occurred in the hands, wrists, forearms, feet, ankles, and lower legs. Consider the hazards of permanent deformity in unreported fractures involving the growing ends of long bones. Hibbert [14] reports after extensive study of high school football injuries that one out of every five participants will sustain an injury. Of those injured, one out of five can expect a fractured bone. It is widely recognized that the younger and "greener" the boy, the greater the probability and extent of the injury.[12c] The following case in point is reported from my practice.

A 12-year-old postpubescent boy bumped heads violently with another player in the tryouts for a junior high school football team. He concealed the fact of a painful neck which lasted for two weeks, and continued playing on the team. Six weeks later he had a similar collision and developed a wry neck, which he concealed for one week, and continued to play football every school day. Because of continued pain, he finally admitted his disability to his parents. I saw him one week after the second injury. On x-ray examination (fig. 1), he had a subluxation of the first cervical vertebra and an older, partially healed fracture of the seventh cervical vertebra. After six weeks in traction, he made an uneventful recovery with no residual neurological findings.

There is a definite possibility of paralysis or death in injuries of the type reported above. However, the dangers of high-pressure athletics are not limited to physical injury alone. Strong emotional reactions are too often engendered by high-pressure competitive games, especially by intercommunity or interscholastic schedules and championships. Such a response occurs not only in children but also in adults—parents, teachers, coaches, and spectators. These exaggerated reactions can lead to abnormal psychological responses, both in parents and in children, in many ways. The hero worship of the star, the sense of failure in the boy who does not make the team or who fails to make the crucial point in the game, the obvious disappointment of the parent when the boy fails or the excessive pride and praise when he wins, the apparent difference in social acceptance by playmates and adults between the winners and the losers—all these can have a profound effect on a child's emotional development and social adjustment.

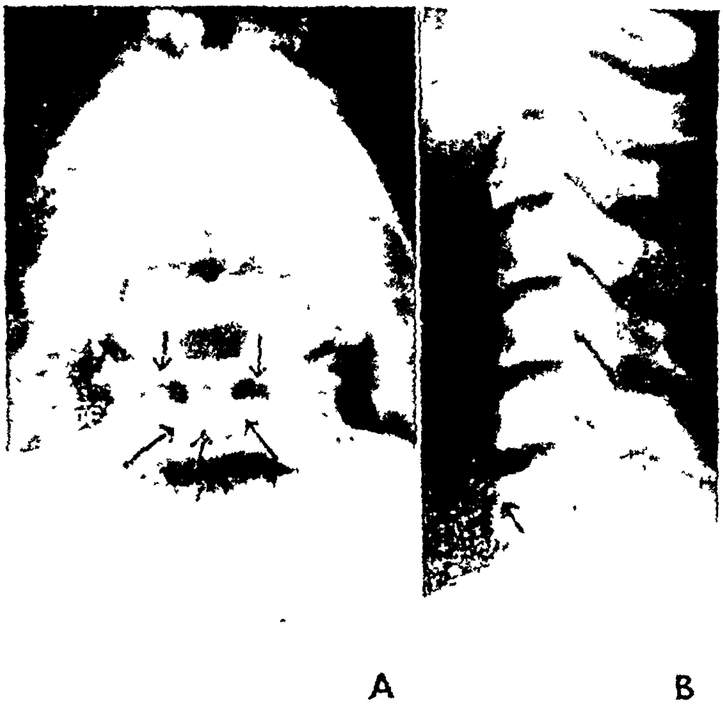
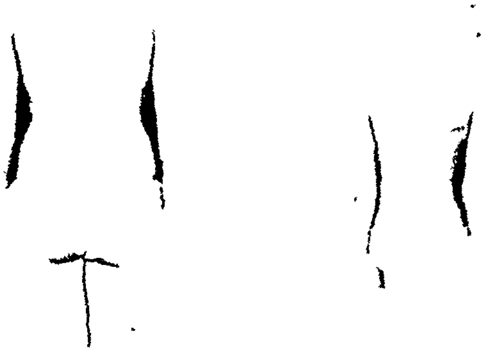


Fig. 1.—A, lateral subluxation of C-1 on C-2 with misalign- of odontoid process and facets in 12-year-old boy ed in football game. B, partially healed fracture of the y of C-7 and loss of normal cervical lordosis in same y.

harmful results engendered by build, and physiological maturity that can exist between girls of the same chronologic age. They have also demonstrated the wide differences in achievement between the lateral and the linear type of girl of the same age (fig. 3). Although there is a difference in time as to maturation in boys and girls, the same physiological principles apply to boys at a somewhat later age. Two 12-year-old boys who are well matched as to height and build may be years apart in their physical development and stamina and, perhaps more important, in the maturity of their judgment. The immature boy is no match for his more mature opponent. Not only is he more likely to lose but also he can be badly injured in the process. A striking example of this was demonstrated in a recent study by Hale.[16] He found that the majority of boys who played in the 1955 Little League World Series, boys of 10, 11, and 12 years, were adolescent and, not as their chronologic age would indicate, preadolescent. In other words, in the elimination games the tendency was for the more mature boys to win out over the immature ones. It is gratifying to know that so large a boys' organization recognizes the lack of correlation between chronologic and develop-



pubescent, depending on the presence or absence of pubic hair and the amount of kinking or curling of the hair (the Crampton test). This is a good measure of sexual development, but in my experience there is not enough correlation with the stage of intellectual or emotional maturity to make it useful as a matching test. It has been suggested[9] that bone age, as determined by x-rays of the carpal bones, be used as a guide. This would probably have the same limitations as the Crampton test. Furthermore, until the question of the danger of excessive radiation exposure in the age of nuclear fission has been settled, it would be unwise to institute an additional mass x-ray program.

The boys most likely to be picked for a football team, particularly the linemen, are usually the tallest and heaviest. These "fast growers" may be the least mature physiologically and emotionally and consequently the least able to stand up under bruising contact sports. I know of no test or set of tests as yet developed, applicable for use in the gym or athletic field, which will measure the level of a preteenage child's physical and emotional maturity with sufficient accuracy to match him safely for strenuous athletic competition.

Adequate and intelligent leadership is, of course, of primary importance. The qualifications of leaders have been outlined in the Fourth National Conference on Physicians and Schools.[2a] Besides the technical qualifications which the conference advocated, good leaders understand the needs and desires and the limitations of growing children. They have a sound knowledge of physiology and of child (and parental) psychology, and they can at least partially match the participants. Unfortunately, such leaders are less likely to be available for elementary schools or for community groups, especially in rural areas and in the smaller towns. Men and women with these qualifications are quickly drawn into more lucrative positions in larger cities or in high schools, colleges, or professional athletics, leaving the younger children with a series of promising but relatively inexperienced coaches. The value of having medical counsel available in these situations is apparent,

Health of the Child

"Boys engaged in programs of competitive athletics are healthier than those not in such programs." I know of no sound evidence to substantiate this statement. On the contrary, there is evidence to refute it. Seymour[18] of Springfield College, Mass., studied 114 boys from five Little Leagues in and around Atlanta, Ga., and compared them with the same number of nonparticipating boys. He found no significant difference in problems, needs, or behavioral pattern between the two groups, except that the participants scored significantly higher acceptance by their peers. Fait[11] reported that a study of two comparable groups of junior high school boys (one group participating in interscholastic sports and the other not participating) showed that growth in height was the only statistically significant difference between the two groups, and this difference was in favor of the nonathletic group. This is probably significant when one considers that, generally speaking, the athletic type of boy is larger and/or has more physical ability and that subsequent improvement might be expected to be greater in this group even if they had not participated in athletics.

Instinctive Play

The sudden violent contact of two young boys to "wrastle," slug, or otherwise maul each other is usually an expression of the normal paroxysmal surge of energy seen in all growing animals. Such contact serves as a release of excess energy and lasts only until it has accomplished its purpose. Unless one of the children is a bully, it usually stops short of any injury. If one of the boys is a bully or if such activity involves a group and develops into an organized sport, such as tackle football or any other form of mass tackling, it ceases to be harmless or desirable. It then becomes the duty of the adults responsible for the children's activities, parents or physical educators, to direct the children to more appropriate, safe, and beneficial outlets for the needed expenditure of their abundant energies. This does not eliminate training in football as an activity for these children. Anderson,[19] football coach at Holy Cross and formerly at Iowa University, has pointed out that touch football for immature children probably provides a better training program for future football skill than does tackle football. (About 60% of all injuries occurring in tackle football occur while tackling or being tackled.[20] Such injuries, of course, should be eliminated with adequately supervised touch or flag football.)

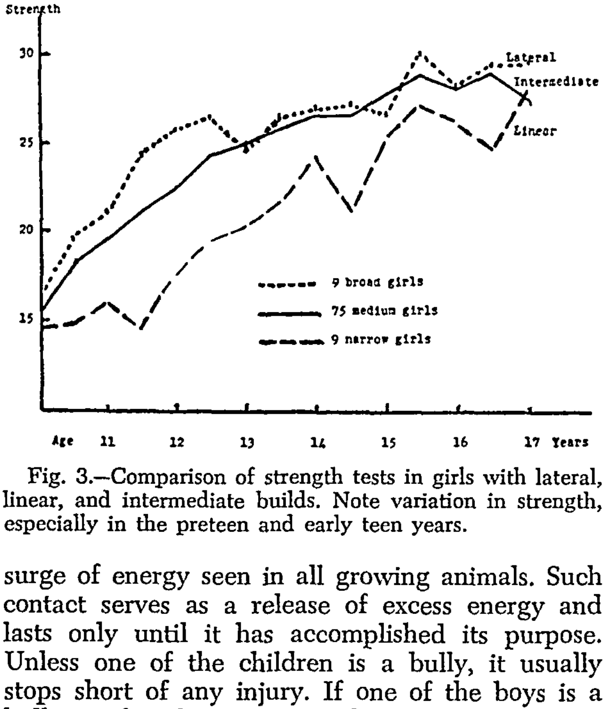


Fig. 3.—Comparison of strength tests in girls with lateral, linear, and intermediate builds. Note variation in strength, especially in the preteen and early teen years.

"Professional" Preparation

"Competitive athletics at this age develops college and professional stars." While this may occur in some instances, it is more common to find that a boy who is a star at 12 years of age is fed up with the sport at 16 or before. He has already "had it," and the sport has nothing more to offer. This is fortunate for the boy. It is difficult for an individual who has been a star athlete from the age of 12 through college not to develop a warped sense of values and an unrealistic concept of the type of economic and social competition he will encounter after college.

"Good Public Relations"

The last point, that "competitive athletics produces good public relations" needs only the comment that the school, the community—and the sponsor—should find other means of advertising than the exploitation of children.

Recommendations for an Athletic Program

I would like to submit 11 recommendations as a means of giving preteenagers most of the advantages and a minimum of the disadvantages in athletic programs.

1. Competition is an inherent characteristic of growing, developing children. Properly guided, it is beneficial and not harmful to their development.

2. Children should have an opportunity of developing skills in a wide variety of individual and team activities. A sound athletic program in schools should include competitive and noncompetitive sports and play activities.

3. Athletics should offer opportunity for all of the children in the school to participate in some phase of the program. Many teams are better than a few teams. At this age, the "star" system is bad.

4. Opponents should be matched as carefully as possible as to their physical and emotional level of development, as well as to their age, size, and body build. The sports and other activities selected should be those appropriate for their capacities. In many instances this requires the judgment of a physician as well as a coach.

5. Body-contact sports, particularly tackle football, boxing, and wrestling, are dangerous at this age. Touch and flag football are safe games if properly supervised.

6. The best possible leadership should be obtained; volunteers, however well intentioned, should work under professional supervision. Parents should have a voice in the policies and administration of the program.

7. All competitive athletic programs should be organized with the cooperation of local medical organizations. All children should have a thorough physical examination before entering the program and at specified intervals during the program. There should be continuous medical supervision and individual attention for such factors as injury, response to fatigue, individual emotional needs, and undue emotional strain. Ideally, a physician should be in attendance at all games. A minimum requirement should be that he be quickly available. The medical group should be responsible also for teaching health observations to teachers and coaches. (A detailed plan of medical supervision for athletic events has been adopted by the National Joint Committee on Standards for Boy's Athletics and endorsed by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.[21]) Through their role as medical advisor, physicians have been led into important research in this field. Some have also developed an interest which has resulted in their distinguished participation in a variety of sports.[20]

8. Regularly scheduled interschool and intercommunity contests are not recommended for this age group; neither are state, regional, or national tournaments or the bowl, charity, or exhibition type of games. Commercial exploitation in any form is unequivocally condemned.

9. Any athletic program should be so designed as to be of educational as well as recreational value.

10. Provision should be made to include in some phase of the program the child who is either physically or psychologically handicapped. This often requires the active cooperation of private physicians and other specialists.

11. Qualified professional leadership should be supplied. It should be such that highly organized, highly competitive programs are avoided. The primary consideration should be a diversity of wholesome childhood experiences.

A community program should also be based on the same principles. It should be entirely voluntary, without undue emphasis on any one sport and without undue emphasis on winnning. Here again, many teams are better than one.

In making these recommendations, I have drawn freely from a number of publications, particularly the Report of the Joint Committee on Athletic Competition for Children of Elementary and Junior High School Age,[22] the five national conferences on physicians and schools,[23] and a report of the Committee on School Health of the American Academy of Pediatrics.[4] Some of these points may be argued. But they represent the considered judgment of the majority of capable professional educators and physicians who have studied the problem. Until continued and comprehensive objective research has finally settled the points in question, the burden of proof rests with those who disagree.

Summary

It is apparent that today's athletic programs suffer from a lack of competent medical advice and supervision. More objective and qualified medical research is needed. More doctors, interested in children and informed on the basic facts of juvenile athletics, are needed to provide medical supervision for school and community athletic programs for preteenagers. If we as physicians are to work toward our stated goal of leading children to secure, responsible, and well-adjusted manhood and womanhood, here is an area where we must get in and pitch.

1791 Howard St. (26).

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VIRUSES AND CANCER.—I continue to be amazed at the willingness of so many investigators to accept viruses as etiological agents for animal cancers and their unwillingness to consider them of potential etiological importance in cancers of man. It should be recognized that cancer is a biological and not a uniquely human problem. Basic biological phenomena generally do not differ strikingly as one goes from one species to another and I regard the fact, now proved beyond contention, that viruses in the form of specific nucleoproteins can cause cancer in animals to be directly pertinent to the human cancer problem. I believe that the time has come when we should assume that viruses are responsible for most, if not for all kinds of cancer and design and execute our experiments accordingly. Cancer is basically a problem in growth and there is no reason to believe the growth of most human cells is different basically from the growth of most animal cells. Acceptance of the viral etiology of human cancer as a working hypothesis will involve a marked change in attitude on the part of many investigators, but this will be necessary if the right approach and the right design of experimentation are to result. What we do in the laboratory depends in large measure upon what we think.—W. M. Stanley, The Potential Significance of Nucleic Acids and Nucleoproteins of Specific Composition in Malignancy, *Texas Reports on Biology and Medicine*, Fall, 1957.

J.A.M.A., April 5, 1958

ORGANIC AND ORGANIZATIONAL ASPECTS OF SCHOOL ADJUSTMENT PROBLEMS

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The statistics of a public school system showed that 5% of the children failed in a given year. In some instances no reason could be found for the difficulty, but in general there was a preponderance of birth injuries or severe postnatal infectious disorders, such as encephalitis, or severe cerebral episodes connected with the acute exanthemas or postnatal trauma. Pediatric and psychiatric examination revealed a fairly common picture of hyperactivity, excessive pressure of speech, insecurity and anxiety, immaturity of reaction, and fright in the examining situation. Electroencephalographic and neurological evidence of brain damage was found in a large percentage of 181 children so examined. After thorough individual evaluations, a systematic study was made of the effects of treatment, which consisted of psychotherapy for both child and parents, specific speech and reading therapy, and the use of certain drugs. Rauwolfia, reserpine, certain anticonvulsants, and a placebo were used in four groups of 69, 102, 44, and 31 children respectively. The best results, under the conditions of the experiment, were obtained with Rauwolfia, which gave improvement in 63 (91%) of the 69 children, but it is emphasized that the drug therapy alone was not responsible for the total improvement. Many children who now fail constantly in school can be saved for society if coordination can be achieved by interested parties in the community. The private physician should become a leader in undertakings of this kind.

In the past two years we have studied a large group of children with school adjustment problems. The children have come with problems of failure in class, specific reading and speech disturbances, and personality difficulties while in the school. The diagnostic procedures have consisted of (*a*) pediatric, neurological, and psychiatric examination, (*b*) specific reading, speech, and intelligence testing, and (*c*) electroencephalographic determinations. Almost without exception, the children have presented a definite clinical picture which, besides the specific school problem, has included hyperirritability, anxiety, fright at situations which are normal for other children, failure to adjust to their associates in school, disobedience, temper tantrums, and, in many cases, bizarre behavior. Their school behavior has been such that it was not possible for them to integrate into a normal school routine. Etiologically, they showed a preponderance of birth injuries or severe postnatal infectious disorders, such as encephalitis, or severe cerebral episodes connected with the acute exanthemas or postnatal trauma to the central nervous system. In some instances, no etiological reason could be found for the child's difficulty. In many cases a severe psychiatric disturbance existed in the parents. Sources of referral of these children in the main has been from private physicians, but some came from a local college reading and speech clinic and some came from the public school system.

Diagnostic Observations

Pediatric Examination.—Pediatric examination in the main revealed only one or two interesting points. Many of these children have mixed dominance, that is, they are either left-eyed and right-handed or vice versa. However, this mixed dominance has beeen accompanied by strephosymbolia in only a few of the children. A small percentage showed neurological findings of a localizing nature, such as spasticity, choreoathetosis, paresis, and ocular muscular defects. In the main, however, the vast majority of these children have been normal on physical examination except for the almost universal hyperactivity and excessive pressure of speech, anxiety, and fright in the examining situation. The children all appeared immature in their reactions. This clinical picture, once observed, is so striking as to be almost diagnostic of the child's difficulties before any history is taken.

Psychiatric Examination.—Psychiatric examination revealed a fairly common picture. The children were insecure, and some were mentally retarded. Many more were badly frightened, existing in a home environment in which persistent disciplinary measures had been almost completely absent. It is interesting to note that this absence of any firm disciplinary policy has resulted almost entirely from the fact that the parents have been advised that the child is abnormal and have failed because of their feelings of sympathy, guilt, and frustration, among other things, to embark on any normal disciplinary

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control of the child. This failure by the parents has contributed a great deal to the difficulties that the child experienced.

Electroencephalography.—Findings in electroencephalograms of 181 children are summarized in table 1. Of these recordings, 15.47% have 14 and 6 per second positive spikes without other electroencephalographic abnormalities, whereas 43.09% had 14 and 6 per second positive spikes with other abnormalities on the electroencephalogram. Other abnormal rhythms without 14 and 6 per second positive spikes occurred in 17.13% of the children; these abnormalities included slow waves, paroxysmal slowing, fast activity, area spikes, amplitude asymmetry, and generalized seizure activity. A few children showed spike and wave abnormalities. The total number with abnormal rhythms included 75.69% of the group. Normal electroencephalograms were seen in 24.31%.

TABLE 1.—*Electroencephalographic Findings in 211 Children*

14 and 6 per sec. Positive Spikes	Other Abnormality	Experimental Group (181 Children), %	Control Group (30 Children), %
+	—	15.47	16.6
+	+	43.09	3.4
—	+	17.13	...
—	—	24.31	80.0

Electroencephalograms of a control series of 30 children who had no difficulties in school or home adjustment also is shown in table 1. Of these, 80% had normal electroencephalograms, 16.6% showed the presence of 14 and 6 per second positive spikes without abnormality, and 3.4% had abnormal rhythms. Gibbs and Gibbs[1] have reported that, in this age group, the incidence of abnormal 14 and 6 per second positive spikes alone was approximately 12% and the incidence of other abnormal rhythms 2% or less.

Treatment

After a thorough evaluation, the treatment of the children consisted of psychotherapy for both the child and the parents, specific reading and speech therapy under the guidance of a reading and speech clinic, and the use of tranquilizing drugs[2] and other anticonvulsant drugs to reduce the tensions which had been interfering with the educational process in the children. The results of treatment are summarized in table 2.

Results

In assessing the results, we are aware that drug therapy alone was not responsible for the total improvement seen in the children. We attempted, however, to determine as closely as possible how much effect the drugs had on relaxing the children's tensions so that the children were thereby enabled to respond to the specific psychotherapeutic and educational methods of treatment. In table 2 it will be seen that 246 children were treated with one or the other of the various drugs. Rauwolfia was used in the treatment of 69 children. Of those treated, 91.3% showed improvement, 5.8% were not improved, and 2.9% became worse with the drug therapy. Reserpine was used in the treatment of 102 children, of whom 74.5% were improved, 15.7% were not improved, and 9.8% became worse. Other anticonvulsants, such as diphenylhydantoin (Dilantin) sodium, phenobarbital, acetazolamide (Diamox), and phenacemide (Phenurone) were used in the treatment of 44 children. Of these, 59.1% were improved, 31.8% were not improved, and 9.1% became worse. A group of 31 children who had been previously on therapy with one of the above drugs was placed on placebo medication. Of these, 6.4% seemed improved over the previous medication, 22.6% were not improved, and 71% became worse when they were taken off therapy with the preceding tranquilizing drugs and were given a placebo.

Comment

The diagnosis in the child with school adjustment problems is a complex one. To evaluate these children properly, a complete analysis physically, psychiatrically, neurologically, and educationally is required before a program of rehabilitation can be instituted. Most of the children presented in this study came to us from physicians in general practice who recognized the necessity for a more thorough examination of the child than had been previously done. A proper diagnostic approach to these children involved the utilization of many services, medical and otherwise. Any attempt to estimate the potentialities and the possible therapy in these children is obviously doomed to failure unless there is coordination among the various diagnostic services. In other words, the private physician and the medical specialist must have liaison between themselves, and, in turn, they must develop a means of liaison with the various special educational diagnostic clinics which deal with the determination of intelligence and with specific reading and speech diagnostic clinics. Without such liaison among all members of the group that are concerned with the child, no adequate conclusions as to the child's potentialities and treatment can be reached.

TABLE 2.—*Effect of Specific Drug Therapy in Children with School Adjustment Problems*

	Effects						
	Improved		No Improvement		Worsened		
Drug	No.	%	No.	%	No.	%	Total in Group
Rauwolfia (Raudixin) ..	63	91.3	4	5.8	2	2.9	69
Reserpine	76	74.5	16	15.7	10	9.8	102
Anticonvulsants	26	59.1	14	31.8	4	9.1	44
Placebo	2	6.4	7	22.6	22	71.0	31

In the evaluation of the drug therapy reviewed above, some conclusions are possible. In the main, Rauwolfia, which represents the whole root of Rauwolfia serpentina, gave the best over-all results therapeutically. Reserpine gave less frequent results but still showed a good response. Phenobarbital, diphenylhydantoin, acetazolamide, phenacemide, and the other strictly anticonvulsant drugs in isolated instances induced improvement in the child but in general were not as satisfactory as were the tranquilizing drugs. The placebo studies showed quite clearly the value of tranquilizing drugs in the treatment of these children. Throughout the entire study it was obvious that no single method exists for diagnosing or treating all children with severe school adjustment problems. The necessity for liaison between some rather diverse groups in the community has been demonstrated. When this liaison has been perfected, the results for the children have been excellent. In most communities no single program makes this liaison possible. In Rockford, Ill., within the past few months this defect has been attacked by the formation of a committee within the school system which has been designated the "Committee of the Whole Child." This committee consists of the superintendent of the schools, four members of the medical society, and the members of the school system who are primarily concerned with specific problems. Its purpose has been to review the diagnostic work on all children within the school system who are failing. Once a month the records of such children are reviewed by this committee with two objectives in mind: (1) to criticize and evaluate the diagnostic procedures that have or have not been done on a given child and to remedy the omissions, and (2) to provide suggestions for future treatment of the child. Where further therapeutic procedures are suggested, a notification is sent to the private physician, to the teacher, to the principal of the school, and to the special school departments which might be involved in the rehabilitation of the child.

The importance of this activity is substantiated by the statistics from our public school system, where it has been shown that 5% of the children in the entire system fail in any given year. The vast majority of these failures occur within the first six years of the child's school life, and it is probable that most of these failures occur within the first three years, during which time the child is acquiring his basic learning skills. Someone must become the leader in every community to coordinate the work of the various individuals and agencies whose help is necessary for these children. The private physician to whom the family brings all of its problems is the one who should spear-head the attack against this problem, which involves such a significant percentage of the children under his care. It is the professional and moral responsibility of physicians to see that more adequate means for the diagnosis and treatment of children with school adjustment problems are devised in their own communities. As a physician embarks on this type of program, he should constantly remind himself that alone he cannot achieve the necessary rehabilitation in these children. His every effort, therefore, must be extended towards developing a community-wide endeavor, in its fullest sense, for the solving of this problem.

Summary

In 181 school children with severe school adjustment problems, electroencephalographic and neurological evidence of brain damage was found in a large percentage of the cases. The use of tranquilizing drugs to reduce the almost universal tension in these children was satisfactory.

The diagnosis and treatment of school adjustment problems is not exclusively a medical problem but demands a working coordination of the private physician, the medical specialist, and the educational specialists in the school. When such coordination can be achieved, many children who now fail constantly in school and become a burden to the community in general may be rehabilitated and take a functional place in their society. The private physician should become a leader in this worthwhile project.

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THE AZYGOS VEIN.—It is not generally appreciated that the azygos vein may be seen on the posteroanterior roentgenogram of the normal chest in up to 15 per cent of cases. Ignorance of this fact has led on occasion to a misinterpretation of the image of the azygos vein—an erroneous diagnosis of mediastinal tumor being made. In addition, abnormal dilation of the azygos vein may have diagnostic significance. For these reasons, familiarity with the roentgenographic appearance of this vascular structure is important. . . . Tomograms usually outline the azygos vein beautifully. Not only is the shadow of the vein sharply defined but its relationship to the trachea and right upper lobe bronchus is easily seen.—Sol Katz, M.D., The Azygos Vein, GP, January, 1958.

DISORDERS OF THE ABDOMINAL AORTA

CLINICAL OBSERVATIONS ON SURVEY OF TWO HUNDRED SEVEN CASES

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Evidence of pathological changes in the abdominal aorta was found in 207 patients out of a series of 3,000 consecutive cases of vascular disorders. The group included 107 patients who had x-ray evidence of calcification without evidence of impaired circulation and 100 patients with both subjective and objective evidence of occlusive disease. Among the 100 there were 36 with evidence of complete occlusion of the abdominal aorta. In such patients, extensive atrophy of the muscles of the thigh was occasionally seen, but it was not frequent in this series. Intermittent claudication was a frequent complaint; impotence was rare. Since occlusion of the aorta is insidious in onset, circulatory function should be studied by means of oscillometric tracings, histamine tests, plantar ischemia observations, and determinations of venous filling time and skin temperature. Aortograms can be made when indicated. A routine soft-tissue x-ray of the abdominal aorta is recommended. The detection of early changes is desirable because even minimal areas of calcification may become foci of thrombosis.

Disorders of the abdominal aorta may occur in various ways, such as embolic occlusion ("saddle" thrombus) at the bifurcation, aneurysm, and structural changes of the walls with particular reference to arteriosclerosis and atheromatosis, with or without thrombosis.

This presentation will be confined to the clinical aspects of pathological changes which take place in the walls of the abdominal aorta, with emphasis on the atheromatous type. The possibility of extensive thrombosis of the abdominal aorta was first discussed by Leriche in 1940.[1] Subsequently, Morel[2] suggested that those cases of thrombotic occlusion of the aorta at its bifurcation be designated as the Leriche syndrome. He described it as a thrombotic disease with a long course of symptoms, consisting of extreme fatigue of the lower extremities, claudication, impotence, global atrophy of both lower limbs, pallor of the legs and feet, absent pulses, and "no trophic changes in the skin or nails." Their description of the pathological process is acceptable. However, some of their conditions have been challenged. This will be mentioned in more detail when symptoms and clinical course are discussed.

Abdominal aorta disorder has stimulated the interest of investigators, angiologists, surgeons, and roentgenologists. Their contributions have been helpful in attempting to clarify some of the problems entailed in this condition. Of the various types of involvement (arteriosclerosis, atheromatous lesions, and superimposed developing thrombosis), any one condition or a combination may exist, from minimal to extensive or complete occlusion. Some patients may have extensive thrombosis with occlusion which will not be revealed by ordinary x-ray studies. On the other hand, x-rays may show calcification of the walls with little or no impairment of the peripheral blood supply.

Segmental occlusion may occur at various sites. It may be evident in the abdominal aorta and not in the lower extremities. In contrast, the large trunks, such as the iliacs and femorals, may be involved without the disease necessarily present in the abdominal aorta. Definite diagnostic methods in reaching a conclusion will be discussed later in the paper.

Survey of Cases

In a survey of 3,000 consecutive cases of vascular disorders, 207 patients were found to have evidence of pathological changes in the abdominal aorta. They were arranged into two major groups according to clinical findings. Group 1 consisted of 100 patients who had definite evidence of occlusive vascular disease based on subjective and objective findings and confirmed by circulatory function tests. This group was further divided into three subgroups: (1) patients with positive x-ray findings, 47; (2) patients whose x-rays were negative for calcification, 11; and (3) patients for whom no x-rays were available, 42. Analyses were made according to age, sex, and symptoms and will be discussed below. Group 2 included

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107 patients with x-ray evidence of calcification but in whom evidence of an impaired circulation was lacking.

An additional survey was made of 36 patients in group 1 who presented evidence of complete occlusion of the abdominal aorta. The results of the analysis of this special group will be compared with those of the milder grades and will be discussed under the heading of symptoms, clinical course, and x-ray findings.

Etiology and Pathology

Arteriosclerosis has been mentioned as the common factor in aortic thrombosis. On the other hand, more stress has been placed on the presence of an atheromatous process. Without getting too involved in the academic discussion, it may be pertinent to clarify the terms of arteriosclerosis and atheromatosis.

If arteriosclerosis is used in the broadest sense, it might be acceptable. However, it may be advisable to make some distinction between these two terms. Arteriosclerosis implies calcification with the deposits primarily in the media. It is an accepted fact that patients may have calcification of large arterial trunks without necessarily having obstruction of the lumen and may have, moreover, good pedal pulses and normal function tests. Atheromatosis, on the other hand, implies pathological changes taking place in the intima with proliferation of the cells, thickening of the inner wall, gradual encroachment upon the lumen, and further developmental changes taking place on this thickened area. Arteriosclerosis connotes a degenerative process, whereas in atheromatosis the problem appears to be more along the lines of metabolic biochemical disturbances. Since atheromatous placques contain a high percentage of cholesterol and lipids, these substances have been given a prominent place in the etiology of thrombosis. There are other factors or theories that have been offered,[3] namely, imbibition, penetration, anoxia, disintegration of the internal elastic fibers, changes in the vasa vasorum with impairment of nutrition of the intima, possible role of cholesterol, S_f molecules, cholesterol/phospholipid ratio, lipoproteins, endocrine disorders, hypertension, vitamin deficiency with particular reference to pyridoxine, and derangement of the collagens. In addition to the above, the following factor deserves consideration.

Sludging of blood (intravascular agglutination) has been discussed by Knisely and Warner[4] as a contributory factor in the development of thrombosis. They claim that sludged blood flows more slowly than unagglutinated blood and that masses of sludge settle down from slowly moving blood to the lower sides of vessels during life. The settled masses sometimes cement together and may form a large mass which, at times, clings to the vessel wall and encroaches on the lumen.

Impallomeni[5] studied the arterial endothelium of arteries taken from limbs amputated for gangrene. He reported that there were changes in the endothelium, with the intercellular cement substance being in some instances inconspicuous and with additional deposits of fibrin. This stage was later followed by disintegration of the endothelial layers in the arteries. Even in the absence of thrombosis, the endothelium had almost completely disappeared.

A recent investigation of uric acid levels has revealed an increased incidence of hyperuricemia in patients with vascular disturbances. As such, it deserves a comparable status with hypercholesterolemia.[6] This does not necessarily imply that the uric acid is responsible for these changes or that these patients have gout. However, it does indicate that metabolic disorders may, in some way, be related to the development of thrombosis.

Toxic infectious substances have been reported as causes of abdominal aorta thrombosis. This is particularly true when it occurs in the younger age groups. Patients with a history of rheumatic fever are particularly liable to develop arterial thrombosis. Syphilis[7] also has been mentioned as a cause.

Site.—Another interesting fact is the site and progressiveness of a developing thrombosis. Some contributors have indicated that the thrombotic process starts in the iliac or iliofemoral arteries and extends upward, passing the bifurcation and involving the abdominal aorta. They have observed such cases both at autopsy and during surgical procedures. In some cases, atheromatous placques may extend into the aortic cavity without necessarily being attached to the intima.

The question as to the primary origin has been discussed pro and con. Some believe that the condition begins more frequently in the iliac arteries near the bifurcation and, as the condition progresses, that it extends upward into the abdominal aorta and may extend as high as the origin of the renal arteries. Others are inclined to believe that the process may start at the bifurcation and the pathological process extends downward, involving the iliacs. On the other hand, one may find various levels involved. It is quite possible that cases may be found where either of the above-mentioned conditions exist. It has also been noted that evidence of periarteritis[8] has been found about the thrombosed aorta, with adhesions embracing the neighboring lymphatics.

Modus Operandi.—The modus operandi of the thrombosis has been aptly described by Duguid.[9] He emphasized the gradual development of mural thrombi, stating that fibrin may be deposited on the internal surface of the artery. It becomes covered with endothelium and then incorporated in the intima. The organization of these mural thrombi is retarded, and they may be compressed into masses of hyaline substance. In time, these undergo fatty changes and subsequently are recognized as atherosclerosis. The larger mural thrombi may be more easily seen. At first, they may appear to be merely a thickness of the vessel walls, but the recurring successive layers of fibrin produces thickening of the inner wall and a gradual narrowing of the lumen of the vessel. Later the thrombotic process may undergo degenerative changes with destruction of the inner surface, and deposits of calcium may appear. In some cases, the involvement is so extensive that it is difficult to conceive how the circulation was maintained without more definite manifestations in the lower extremities and more numerous episodes of embolic occlusion during life.

Symptoms and Signs

Occlusion of the abdominal aorta has an insidious onset. It is difficult to give definite facts as to how long it takes from the actual beginning of the atherogenesis until it reaches the stage where the lumen is encroached on. The fact that so many of the cases in group 2, where there was x-ray evidence of calcification in various degrees without symptoms or signs, further emphasizes this point. The development of symptoms will depend on the rapidity of the pathological changes in the aorta and the formation of an adequate collateral blood supply. This may take a matter of years. Any effort to become more specific as to the lapse of time necessary for this progressive development must be purely speculative.

Symptoms.—An analysis of symptoms of 100 patients with clinical evidence of some degree of aortic involvement is found in table 1. The most common symptom was claudication. It will be noted that 15 patients complained of claudication of the muscles in the hip or thigh and 63 complained of cramps at the calf level. However, some of the 15 patients mentioned above also had cramps in the legs. The total incidence of claudication at one level or other was 78%. Although the incidence of claudication in the muscles of the hip and thigh was much lower, this does not detract from its significance, because when it is present it more definitely points to an obstructive lesion higher up.

Table 1.—*Analysis of Symptoms in One Hundred Patients with Clinical Evidence of Pathology of Abdominal Aorta*

		Claudication						
	No of Cases	Hip Thigh	Calf	None	Pains	Fatigue	Impotence	Paresthesia
Positive x ray	47	5	31	11	30	25		35
Negative x ray	11	3	6	2	4	4		2
No x ray	42	7	26	9	21	17	2	20
Total	100	15	63	22	55	46	2	57
		78						

Of the other symptoms, the complaint of numbness and paresthesia occurred in 57 patients of the 100 in the group; 55 complained of pains. Fatigue was mentioned in 46 of the cases. Ordinarily, one would expect a higher incidence of this symptom among these patients.

Impotence, stressed by Leriche and others, was an uncommon complaint among our series. Only 2 of 67 males were so recorded. This concurs with the findings of DeWolfe and associates[10] and Covey[11] that this symptom need not be considered so prominently as a guide for diagnosis, as was originally stated.

Table 2.—*Analysis of Clinical Findings in Thirty-Six Cases of Severe Occlusion of the Abdominal Aorta*

		Cases		
		No	%	Remarks
Age, yr	<50	8	22.2	Range, 29-70
	50-59	15	41.7	
	60-70	13	36.1	
Sex	M	29	80.5	Ratio (M:F), 4:1
	F	7	19.5	
Symptoms	Claudication: hip thigh	5	13.9	Total claudication incidence, 80.5%
	calf	24	66.6	
	Pain	23	63.9	
	Paresthesia	18	50.0	
	Fatigue	18	50.0	
	Impotence	0	0	
Circulatory function studies	Oscillometer readings, 1 degree or less	36	100.0	
	Histamine response			
	Marked delay	28	90.3	31 cases studied
	Moderate delay	3	9.7	
	Positive plantar ischemia	32	88.8	
	Delayed venous filling time	30	83.3	
	Skin surface temperature			10 cases studied
	Rise to 30C or more	9	90.0	
	Less than 30C	1	10.0	
Soft tissue x ray	Marked calcification	6	35.4	Total calcification incidence, 70.6%
	Moderate calcification	3	17.6	
	Minimal calcification	3	17.6	
	Negative x rays	5	29.4	

It may be of interest to compare a detailed analysis of observations in the 36 patients that showed evidence of marked occlusion of the abdominal aorta (table 2). In this latter group, the results were as follows: 29 (80.5%) complained of claudication with a marked predominance at the calf level; 23 (64%) of pain, and 18 (50%) of numbness, paresthesia, and fatigue. It may be noted that the incidence of the symptoms were generally higher than in the over-all group.

Signs.—On inspection, it was noted that the nutrition of the feet and legs is not so disturbed as one would expect, judging from the clinical evidence of a markedly impaired circulation. Pallor was frequently noted. Patients with complete occlusion of the abdominal aorta may show evidence of global atrophy in the muscles of the thighs, but it was not a frequent finding in this series.

On examination, the pedal pulses were usually absent. However, in some of the patients, they were present on one side or the other, depending on the completeness or incompleteness of the pathological changes in the abdominal aorta. Femoral pulses also showed varying degrees of diminution to absence. In patients with severe occlusion (table 2), the femoral pulses were absent bilaterally. However, in the incomplete cases, one side may show a fair pulsation.

Examination Results

Circulatory Function Studies.—Circulatory function studies performed in this survey consisted of oscillometric tracings, histamine test, plantar ischemia observation, venous filling time, and skin surface temperature observations. Results of these findings confirm the presence of some degree of impairment of the arterial circulation.

The oscillometric tracings were subnormal at both thigh and calf levels. In a fair percentage of these patients, the thigh readings were less than that of the calf. This certainly was not the usually anticipated pattern. Normally, the thighs show a higher reading than the legs. It was hoped that this could be interpreted as a diagnostic aid in detecting occlusion of the abdominal aorta. Although this finding was present in many cases, it was not found consistently enough to warrant its acceptance as a significant factor in differential diagnosis. The histamine response showed varying degrees of delay from slight to marked. Similarly, the results of other studies showed evidence of impairment but to a variable degree.

TABLE 3.—*Relationship of Aortic Calcification to Aortic Occlusion**

	Aortic Occlusion		No Occlusion	
Degree of Aortic Calcification	No.	%	No.	%
Minimal	7	22.6	24	77.4
Moderate	18	29.2	47	70.8
Marked	22	37.9	36	62.1
Total	47		107	

* Survey of 165 cases with x-ray findings from groups 1 and 2 (Eleven patients with definite occlusion, but no calcification, are not here included.)

In the detailed study of the patients who had complete aortic block, the results of the function studies were more uniform, as seen in table 2. The oscillometric readings at thigh level were 1-degree spike or less, and at calf level either a flat line or a wavy line was usually seen. Histamine response showed a preponderance of the patients (78%) to have marked bilateral delay of both the wheal and flare reactions. The remainder showed a definite impaired result. Plantar ischemia was almost universally present. Venous filling time was definitely delayed in all.

Skin surface temperature studies, usually looked on as the most dependable and most reliable test of circulatory function, must be carefully evaluated in patients with abdominal aorta thrombosis. In 10 patients with complete occlusion, 9 showed a marked rise, reaching about 30 C. In five of these nine the temperature rose even above the level of 31.5 C. The 10th patient showed a rise of only 4 C, to a maximum of 28.8 C. In this particular group, there may be a rise of skin temperature readings to normal or close to normal levels (30-31 C). This finding demands some explanation. It may be interpreted that the occlusion is high up in the abdominal aorta and that the other large arterial trunks, iliacs and femorals, are not necessarily involved. If further studies on a larger series will confirm this fact, it may be useful in selecting those patients with segmental occlusion of the abdominal aorta as likely prospects for surgical intervention.

X-ray.—As mentioned above, roentgenologists have been interested in abdominal aorta disorders and have attempted to clarify the role of x-rays in detection of sclerosis and atheromatosis.

In this survey of 207 cases, 165 of the records had soft-tissue x-ray reports of the abdominal aorta and of the vessels in the feet, legs, and thighs. Aortograms were not made routinely because of the liability of side-effects but were performed when indicated.

The results of the x-ray studies were analyzed as to the degree of calcification and further compared with the clinical picture of thrombosis and degree of occlusion of the abdominal aorta. Age and sex were similarly observed in their relationship to the calcification.

In group 1, the 100 patients with clinical evidence of aortic occlusion, 47 (81%) revealed calcification, whereas 11 had no evidence of calcific sclerosis. In group 2, which comprises 107 patients with no clinical evidence of occlusion, there were varying degrees of calcification. This poses the problem of the relative value of x-ray in diagnosis of abdominal aorta disorders and how it can be evaluated.

In order to gather more information on this particular angle, 36 cases of marked occlusion of the abdominal aorta were reviewed in greater detail (table 2). In these cases, 17 patients had been x-rayed: 12 (70.6%) had some degree of calcification, and 5 (29.4%) had negative reports. The absent finding in the latter five patients need not necessarily preclude a diagnosis of occlusion. It merely indicates that arterial thrombosis may be present and will not be detected by x-ray unless calcific deposits have been superimposed on the pathological process.

Conversely, the relationship of degree of aortic calcification to the presence of occlusive phenomena was tabulated (table 3). Of the 58 patients with marked x-ray findings, 22 (37.9%) had evidence of occlusion and 36 presented none. In the moderate calcification group, 18 (29.2%) of 65 patients had signs of aortic block, and of those with minimal deposit, 7 (22.6%) of 31 had some degree of aortic occlusion. From the above findings, and not forgetting the 11 cases of occlusion with negative x-ray findings, it would seem that a corollary can be made, namely, although calcification in itself does not necessarily mean occlusion, the greater degree of calcific deposit the greater the chance of the existence of thrombosis.

In the over-all survey, 14 patients were found to have segmental aortic calcification, i. e., positive x-ray evidence of calcification in the abdominal aorta with negative x-rays of the vascular structures in the pelvis and lower extremities. Of these, three had definite evidence of aortic occlusion, two showed occlusion of a questionable grade, and nine presented no clinical evidence of aortic block. From this small series, it appears that there is no direct correlation between segmental calcific deposits and clinical aortic occlusion.

Age and sex will be discussed in the succeeding portion of the paper. However, a brief word concerning the relationship of x-ray findings to these factors is in order here. As seen in table 4, the percentage of positive calcification increases tremendously above the age of 50 and is almost 100% above the age of 60. Since calcific deposits are associated with degenerative changes, this finding is certainly not unexpected. Male-female ratio is approximately 2:1 in those patients with calcification and approximately 1:1 in those with negative x-rays. While this is a notable difference, it does not appear great enough to have clinical significance.

Age, Sex, and Race

Age.—It is conceded that thrombosis of the abdominal aorta may occur about one decade earlier than expected in individuals with thrombosis with generalized arteriosclerosis. The age incidence in group 1, in which there are 100 cases with varying degrees of pathology, was analyzed (table 4). There were 22 patients below the age of 50 years. Thirty-four were in the sixth decade, 33 in the seventh, and 11 in the eighth.

In the special series of 36 patients (table 2) with complete occlusion, 8 (22%) were below 50 years of age; 15 (41.7%) were in the sixth decade; and 13 (36.1%) were in the seventh decade. The youngest male was 29 years old, and the youngest female was 36. Evidently, there was very little difference in the age incidence between patients with severe cases and those with less involvement. However, it may be of interest to note that this condition may be found in the younger age groups. Leriche and Morel [12] mentioned that their youngest patient was 29 years of age, and DeBakey [13] reported that in his series the ages ranged from 33 to 63 years and that 70% of the patients were in the fifth and sixth decades. In the series of Szilagyi and Overhulse,[14] the ages ranged from 45 to 61 years.

Sex.—In most of the contributions on the subject of occlusive disease of the abdominal aorta, the predominance of males over females was stressed. Leriche and Morel [12] mentioned that this condition was found mostly in males. In DeBakey and coworkers' [13] series of 22 patients, all were white males. The topic of sex influence in peripheral vascular disorders is interesting. In thromboangiitis obliterans, only 1 or 2% of the cases has been reported as occurring in females. The explanation is most likely along the lines of a protective influence of the gonads. In group 1 (100 cases of varying degrees of pathological changes in the abdominal aorta), the sex ratio of males to females was 2:1 (table 4). However, in the special group of 36 patients with advanced pathology, there were 29 males and 7 females, a ratio of 4:1. Petersen,[15] in a survey of 220 patients (101 females and 119 males) based on x-ray studies, reported that pathological changes in the aorta but not necessarily occlusion of the abdominal aorta may occur as frequently in females as in males.

Race.—The consensus of the contributors on this subject is that this condition has been found among whites. No Negro patients were reported in our series. This is similar to the status of race in thromboangiitis obliterans.

Table 4.—*Analysis of Age and Sex in 100 Patients with Some Degree of Pathology of Abdominal Aorta*

	Age						Sex		
X-ray	<40	40-49	50-59	60-69	70-79	>80	M	F	Ratio (M:F)
Positive	3	5	20	14	3	2	31	16	1.9:1
Negative	1	5	4	1	...	...	6	5	1.2:1
None	1	7	10	18	6	...	30	12	2.5:1
Total	5	17	34	33	9	2	67	33	2:1

Diagnosis

Because of various degrees of involvement, it is advisable to discuss diagnosis in four groups: (1) extensive thrombosis approaching complete occlusion of the abdominal aorta, (2) evidence of structural changes with incomplete occlusion, (3) x-ray evidence of calcification but no impairment of the circulation, and (4) iliofemoral artery thrombosis.

Thrombosis Approaching Complete Occlusion.—The diagnosis will be made from the clinical picture, which entails symptoms, signs, the various tests for circulatory function, and x-rays. The symptoms and signs will be conditioned by the extent and degree of involvement, the proportional development of an adequate collateral circulation, and the duration of the disease.

Briefly, the diagnosis of occlusion of the abdominal aorta may be made in comparatively younger age groups (fourth and fifth decades) and probably in white males. The chief complaints are marked fatigue coming on rapidly and claudication, more commonly found in the calves; when claudication involves the muscles in the thighs and buttocks it is highly significant.

The presence of global atrophy and the striking preservation of nutrition of the distal parts, despite the over-all clinical picture of a markedly impaired circulation, deserves special consideration. Sex impotence, when present, is significant. However, it is not so common a complaint as has been originally emphasized.

Examination will reveal absent or markedly diminished femoral pulses and absent pedal pulses. The various function tests will indicate that there is a markedly impaired circulation. A possible exception to the rule is the skin surface temperature. In some cases, the skin temperature after nerve block may rise to normal levels. This may be interpreted as presence of an extensive block (higher up) in the abdominal aorta but the large arterial trunks are not involved.

X-ray is a helpful procedure in making a diagnosis. In patients with clinical evidence of extensive thrombosis, a positive finding of calcification will confirm the diagnosis. However, in some definitely proved cases of occlusion x-ray may not reveal calcification.

Incomplete Occlusion.—The recognition of the various degrees of involvement of the abdominal aorta, or the so-called "incomplete" forms, is important. In this group of patients, the symptoms are not necessarily so marked or striking. These patients complain of fatigue and claudication. The claudication is likely to involve the muscles in the legs. The sex ratio is less apt to show the predominance of males over females. The circulatory function tests indicate a markedly impaired circulation, out of proportion to the degree of symptoms or complaints. The pedal pulses are invariably absent. The femoral pulses may be diminished or absent and need not show the bilateral impairment as seen in the more severe forms. X-ray may show calcification of the abdominal aorta and the larger trunks. In the vast majority of cases, x-ray will show varying degrees of calcification.

Calcification Without Circulatory Impairment.—The only evidence of pathology in the abdominal aorta in our patients with calcification without circulatory impairment was revealed by x-ray. There were 107 patients with varying degrees of calcification but no definite findings of an impaired circulation. These patients may be considered as possible candidates for future developments in the abdominal aorta. Petersen[15] reported, "If a roentgen examination shows calcareous shadows in the aorta, it may usually be concluded that atherosclerosis is present in the intima." Positive x-ray findings are particularly significant in individuals who are hypertensive, in diabetics, and in patients who have high blood levels of cholesterol or uric acid. These groups may eventually be designated as having potential cases of abdominal aorta thrombosis. As such, routine examination of the abdominal aorta is recommended. This applies to the soft-tissue technique and not aortograms, which should be performed only when indicated. The early recognition and management of such cases may eventually lead to instituting measures of preventive medicine.

Iliofemoral Thrombosis.—Patients with iliofemoral artery thrombosis usually complain of fatigue and weakness in the extremities. The onset is gradual. Claudication of the calf muscles is a common complaint, as is coldness and numbness of the involved limb or extremities. This is frequently unilateral, and, when bilateral, one side is usually involved more than the other. There is a tendency for trophic changes in the distal parts. Females may be involved as well as males. This condition usually appears in an older age group than that mentioned for the occlusive abdominal aorta type of involvement. The tests for circulatory function will indicate a markedly impaired circulation in the involved extremity. X-ray may and may not reveal calcification of the involved vessels, depending on the etiological background. If the background is of arteriosclerosis, calcification usually may be seen. In these cases, skin surface temperature studies will be more apt to show a failure to reach normal levels. When indicated, direct arterial visualization or aortogram may be performed to definitely localize the site of the pathological area if surgery is contemplated.

Differential Diagnosis.—The various conditions to be excluded in differential diagnosis depends on the site indicated by the patient's complaints. If it is in the hip, as observed in some cases, then the question of a bursitis or neuritis must be excluded. Similarly, hypertrophic arthritis of the spine or the hip is to be considered.

In most of the patients who have extensive thrombosis or occlusion of the abdominal aorta, the condition may be erroneously diagnosed as a ruptured or displaced intervertebral disk. The differential diagnosis can be readily made by thorough x-ray of the spine and also by the presence or absence of a markedly impaired peripheral circulation.

Another condition to be excluded is thromboangiitis obliterans. This may be suggested when dealing with the younger age groups. In this disease, the history of a "back-log" of severe pains which predominate the clinical picture, the marked preponderance in males (9:1 or even higher), the presence of trophic changes in the tissues, the tendency for gangrene to develop early and progress more rapidly, and the history of preceding episodes of recurring infectious thrombophlebitis should be helpful in making the diagnosis. The skin surface temperature observation will show little or no rise after nerve block.

Summary and Conclusions

A survey of 207 patients with various degrees of abdominal aorta pathology included 100 patients with definite evidence of impaired circulation and 107 patients with x-ray evidence of calcification but no appreciable impairment of the peripheral blood supply.

The main conditions of etiology and pathology revolve about arteriosclerosis and atheromatosis. The question as to whether the thrombosis begins primarily in the abdominal aorta and extends downward or in the iliac arteries with extension of the process upward has been discussed by various contributors pro and con. It is quite possible that this problem must be considered on an individual basis.

The most frequent symptom of impaired circulation was claudication (78%). This occurred more commonly in the calf; however, when the hip or thigh muscles are involved, this complaint is more significant. Impotence, which has been stressed by some writers, is not a frequent occurrence. The role of x-ray in diagnosis is valuable, as applied to the soft-tissue technique. Aortograms are recommended only in selected cases. Although calcification may not be revealed in some cases of extensive occlusion, the presence of positive x-ray evidence is significant even when minimal findings are present.

There may be a predominance of male over female (4:1) in the patients with evidence of marked occlusion, but in patients with mild cases of pathological changes in the abdominal aorta or with minimal x-ray findings the ratio is considerably less.

Diagnosis of occlusion of the abdominal aorta may be made on the basis of the symptoms and signs suggesting a markedly impaired circulation, but with a striking preservation of the nutrition in the distal parts. Circulatory function tests will confirm the presence of an interference of the blood supply to the extremities. However, a proper interpretation of skin surface temperature studies in some of these cases must be kept in mind.

A routine soft tissue x-ray of the abdominal aorta is recommended and may be helpful in detecting an early case of beginning changes in the abdominal aorta because these areas of calcification, however minimal, may eventually become likely foci of developing thrombosis in the future. This may make it possible to recognize individuals having potential cases of abdominal aorta disorders. This particular group may also supply data for further investigation of atherogenesis and the application of preventive measures in the future.

2007 Pine St. (3) (Dr. Kramer).

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ACUTE PANCREATITIS.—Experience with acute pancreatitis over a 10-year period has been analyzed to evaluate the results of current therapy, and particularly the addition of concentrated albumin to customary treatment. During the same period blood volume determinations have shown marked deficits, in patients with pancreatitis, resulting in earlier and more liberal administration of whole blood. The results indicate that albumin together with whole blood has become the only important addition to the treatment of acute pancreatitis in this hospital during the past 10 years.—D. W. Elliott, M.D., Treatment of Acute Pancreatitis with Albumin and Whole Blood, *A. M. A. Archives of Surgery,* October, 1957.

J.A.M.A., April 5, 1958

CLINICAL NOTES

CERVICAL CELL STUDIES—A METHOD OF INCREASING PRODUCTION

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The effectiveness of cervical cell studies for the detection of early asymptomatic cervical cancer, in either the early invasive or the preinvasive stage, has been well documented and is now generally accepted by the medical profession. The major problem at the present time, where large numbers of women are being screened by the cell study method, is the scarcity of trained technicians to perform the laborious task of screening the slides to eliminate the normal and pick out the abnormal slides for further study. The demand for such screeners greatly exceeds the supply and will do so for some time to come. In an effort to evaluate methods of increasing the productivity of available personnel, we decided to determine whether a single slide preparation would approach, in accuracy, the examination of two or more slides from *each individual when the technique of visualization* of the cervix and the direct endocervical swab was utilized.

Method

Twelve thousand asymptomatic women were evaluated. A moistened speculum was placed in the vagina before any pelvic examination, with lubricant, had been made. Cell specimens were obtained by rotating a nonabsorbent cotton swab in the endocervical canal and immediately preparing duplicate slides. In a relatively few instances three slides were prepared. The slides were immediately fixed in a solution of half ether and half 95% ethyl alcohol. After fixation they were stained after the method of Papanicolaou. The preparations were then screened by trained cytology technicians. Any preparation containing abnormal cells was ink-dotted, and the slides were then examined by a senior technician with considerable experience in cytology. The preparations thought to show abnormalities at this screening were, in turn, evaluated by a pathologist for final decision. It should be emphasized that our approach to such cell studies was not one of diagnosis but rather one of detecting cellular abnormalities which, in our opinion, would warrant further tissue examination. In other words, the reports sent to the physician or to the service or clinic where the specimen was obtained never mentioned the word "cancer." Instead, they contained a statement that abnormal cells were present and that repeat studies, multiple cervical biopsies, diagnostic conization, dilatation and curetage, or any combination of these was advised.

Results

More than 24,000 slides from 12,000 women were examined. Sixty-one of the patients with abnormal cell studies have subsequently had the diagnosis of carcinoma of the cervix made by tissue examination. Of the 61, 20 had invasive carcinoma and 41 were thought to have intraepithelial carcinoma. In 60 of the 61 cases both slides examined showed abnormal cells, although, on occasion, one slide was considered to be a much better preparation than its mate. It was often noted that the first slide prepared from the swab contained the greater number of cells. In a single case there were abnormal cells on the first slide prepared, whereas the duplicate slide was considered insufficiently atypical to have suggested the need for a biopsy. It is our opinion and the opinion of the screeners that this second slide was deficient in cells and would rightfully have been called "unsatisfactory" had it been submitted as a single slide. The biopsy in this case was diagnosed as intraepithelial carcinoma. In addition to the cases that proved to be carcinoma, a single smear appeared to be effective in detecting cervical abnormalities later proved to be cervical dysplasia by biopsy.

Comment

Our reason for using the endocervical swab technique was based primarily on the fact that technicians can screen specimens obtained in this manner more rapidly than they can aspirations from the vaginal pool. When abnormal cells are found in direct cervical smears they are almost always present in great numbers, which brings to a minimum the problem of interpreting one or two abnormal cells in a cell study. It seems obvious then that a given number of screeners can almost double their productivity, case-wise, if the cell

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study consisted of a single slide. For those laboratories in which the goal is similar to ours, that is, to make the examination available to the greatest number of women in an effort to detect the greatest number of cancers, we believe a single smear does not appreciably sacrifice specificity. It should, perhaps, be emphasized that this is true only if the endocervical swab, under direct visualization of the cervix, is used and if adequate preparations for cell studies are insisted on before an interpretation is rendered.

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NEW, PRACTICAL CONCEPT OF HEARING TESTING FOR USE OF THE GENERAL PHYSICIAN

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Hearing loss has long been one of the common ailments affecting man, but only in the last few years has it begun to receive attention commensurate with its importance. The early detection and treatment of hearing loss have, in the past, been difficult to realize because man is able to compensate for moderate amounts of loss and because the precision electronic instruments necessary for accurate tests of hearing have only recently become generally available. At present, a widespread interest in conservation of hearing has been stimulated by the increasing social need for general hearing ability good enough to permit persons to use and enjoy radio, television, and the telephone and by the promulgation of laws which provide for payment of compensation to persons who have lost hearing through occupational hazards.

Techniques for testing hearing have been improved considerably during the past few years, but current testing methods are still too cumbersome to meet growing demands for rapid tests of hearing. One of the most compelling demands is found in schools. Most school systems throughout the country do not have programs for testing the hearing of school children. Yet it is very important that the status of hearing of youngsters be checked adequately and frequently so that early hearing losses may be detected and treated before they have progressed beyond the stage of successful treatment. A rapid, simple, and inexpensive method of testing the hearing of large numbers of individuals is required for any practical large-scale school program of hearing testing. Other groups, particularly pediatricians, general practitioners, internists, and industrial physicians, also stand to benefit from the use of such a hearing test. In our opinion, a noticeable and significant lack of hearing testing exists in the offices of these physicians, probably because it has not been practical for them to provide the trained technicians, expensive instruments, sound-treated rooms, and the time required by current methods of testing hearing ability.

It is the purpose of this paper to describe a rapid, simple auditory screening test. The test was originally developed to determine the status of hearing of persons who work in noisy environments, but it is, we believe, particularly well suited to the needs of schools, general physicians, and others who can help significantly to conserve hearing by detecting early hearing loss.

Rapid Auditory Screening Test

This proposed method of rapid auditory testing grew out of our observation that a large majority of the audiograms of persons with impaired hearing showed the largest hearing loss at 4,000 cps. It appeared to be a reasonable assumption that the hearing loss at any frequency lower than 4,000 cps would not be more than the hearing loss at 4,000 cps. The important frequencies for hearing and understanding conversational speech are 500, 1,000, and 2,000 cps; then, if the threshold at 4,000 cps is within normal limits, hearing for speech will

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also be within normal limits in at least 98% of the listeners. Two programs were undertaken to test the validity of this assumption. First, we analyzed three different groups of existing audiograms. Second, we arranged to have the hearing of 1,500 school children tested, and we then analyzed the results.

Analyses of Three Groups of Existing Audiograms.—For the first program, 1,128 audiograms were selected at random from the files in our office. The causes of hearing loss were diagnosed as follows: (1) otosclerosis, 34.1%; (2) presbycusis, 16.6%; and (3) miscellaneous causes, 59.3%. An analysis of these records showed that 98.24% of all patients who had a 15-db. loss at 4,000 in either ear had no loss larger than 15-db. at frequencies lower than 4,000 cps. If a person has no more than a 15-db. loss, it may be assumed that he has essentially normal hearing.

For the second group, a similar study of the records of 1,749 males who participated in the 1954 Wisconsin State Fair hearing survey was made; this resulted in almost precisely the same percentage figures.

For the third group, audiograms of 1,971 male aircraft employees were analyzed; 99.2% of the audiograms showed no greater loss at any frequency below 4,000 cps than the loss found at 4,000 cps.

Survey of 1,500 School Children in Los Angeles Schools.—With the cooperation and assistance of the Los Angeles Board of Education Health Department, 1,500 children were screened first at 4,000 cps at 15 db. and then by the standard sweep-check method. This method screens at each audiometric frequency at a specified level (in this study, 15 db.). All the hearing failures found by either method were then tested by the usual threshold test. The results of this study indicate that the single-frequency screening method was nearly as accurate as the sweep-check method in this particular series of tests. When the children were screened at 4,000 cps only, 94.9% showed normal hearing; when the sweep-check test was used, 93.9% showed normal hearing. Another similar series of tests, carried out on a different group of school children, showed the reverse of this; the single-frequency screening test disclosed more valid hearing failures than did the sweep-check method. On the strength of these findings, we have concluded that single-frequency screening is equally as accurate as sweep-check screening, the method now used as a standard procedure for screening large groups of school children.

As an extension of this study, 500 of the 1,500 school children were screened at both 2,000 and 4,000 cps to determine if a greater accuracy would result when two frequencies were used. No noticeable increase in accuracy resulted.

Screening at 4,000 cps alone may not always be adequate. Many persons show a slight hearing loss at 4,000 cps. This loss has come to be known as the "4,000-cycle dip" or "notch." In school children, such dips are usually due to a congenital defect that is relatively unimportant in itself. Unless the dip is accompanied by losses at the lower frequencies, it has no significant effect on the child's hearing. Obviously, if 4,000 cps were the only frequency used to screen school children, many of them would be referred to an otologist for examination on the basis of the 4,000-cycle dip. In order to avoid needless referral in these cases, the 2,000-cps tone was added to the screening test for school children. When school children are screened at the two frequencies, the number of needless referrals is negligible.

Uses of Single-Frequency Screening

We feel that single-frequency screening (4,000 cps) is particularly adaptable for use by industry and the military services.

Industry.—Industrial hearing testing programs call for frequent follow-up tests. The purpose of these tests is to determine the presence of a change in hearing level from the level found by the preplacement or initial hearing test. It is well known that most of the hearing loss produced by noise exposure occurs at 4,000 cps. Therefore, if the employees show no change at 4,000 cps, no change at any lower frequency will be expected in 99% of the employees tested. If a base-line audiogram is not essential, the single frequency test can be used as an initial test.

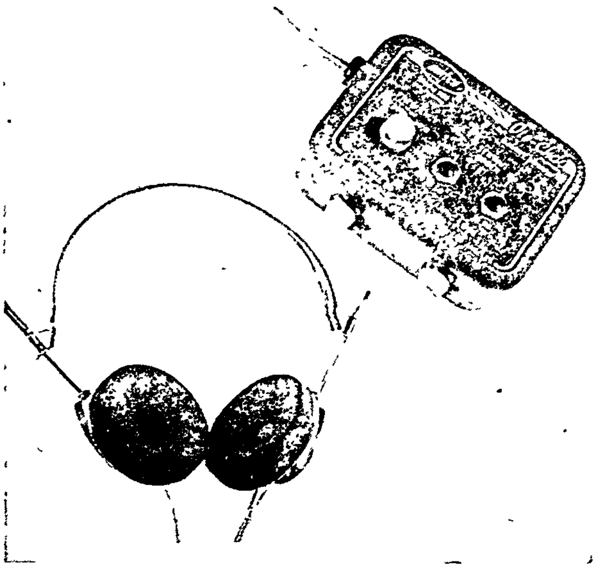
Military Services.—The military services require a rapid auditory test for induction purposes which will divide the personnel into two classes: (1) those with satisfactory hearing and (2) those with unsatisfactory hearing. The single frequency test (4,000 cps) makes it possible to test the inductees rapidly at a specific prefixed level and correctly separate them into these two categories. The military services also have the same general needs as industry. These needs can be satisfied with the single-frequency test.

Uses of Double-Frequency Screening

We feel that double-frequency screening tests (2,000 and 4,000 cps) are well suited for use in school testing programs and doctor's offices.

School Testing Programs.—The purpose of a hearing testing program in schools is to detect early hearing losses in the school children. On the strength of the findings presented above, it is felt that when no significant loss is found at 4,000 cps there will be none found in any of the lower frequencies. It is reasonable then to divide school children into a normal hearing group and an abnormal hearing group. The children with normal hearing will need no further testing until a recheck test is made later at some specified time interval—probably two years. The children with abnormal hearing (those who failed to hear the test signal at a predetermined level, probably 15 db.) will be referred for complete threshold tests. As previously mentioned, it was considered advisable to add 2,000 cps for use in schools to avoid needless referrals. If a child fails to hear at 4,000 cps he is tested at 2,000 cps, and if this tone is heard at 15 db. no further testing is necessary at that time.

Doctors' Offices.—The double-frequency screening test (2,000 and 4,000 cps) provides a rapid and accurate means of detecting the presence of a possible hearing loss during routine physical examinations performed by pediatricians, internists, and general practitioners.



Double-frequency model (2,000 and 4,000 cps) of hearing testing instrument.

If during a routine physical examination the patient's hearing is tested at 4,000 cps and he responds to the tone at 20 db., his hearing may be said to be within normal limits. On the other hand, if he fails to hear at both 4,000 and 2,000 cps at 20 db., he should be referred for threshold testing to determine the exact status of his hearing.

Advantages

Ordinary quiet rooms, such as offices and first-aid rooms, may be used for the limited frequency screening audiometry. In addition, the test requires only a few seconds to administer, thus saving time and preventing fatigue and loss of attention in children. The instrument is inexpensive, lightweight, and durable, and trained personnel are not essential.

Description of Instrument Used for This Study

The measurements reported here were taken with a commercially available instrument called the Oto-chek (see figure). The Oto-chek is a simple, battery-powered, transistorized screening audiometer. There are two basic models of the Oto-chek, a single-frequency screener and a double-frequency screener. The first is designed to test hearing at 4,000 cps only, the other at 4,000 cps and at 2,000 cps. Either model may be obtained with a single earphone or with double earphones, according to the user's preference, and with output levels of 15 and 35 db. or of 20, 35, and 50 db. The frequencies and levels are fixed. The earphones are energized by means of push-buttons. Each button is labeled in decibels of hearing loss according to the level controlled by that particular button. When binaural earphones are used, only one earphone is energized at a time. The live earphone is selected by means of a two-position rotating switch. Research has indicated that a single earphone is adequate for most purposes. The only disadvantage is related to switching from one ear to the other. This is readily accomplished, however, by having the patient handhold the earphone. The entire circuit is housed in a metal box which measures 5.5 by 4 by 2 in. The Oto-chek is powered by a Mallory mercury cell battery. The earphones are of the dynamic type and are coupled to the ear by a standard MX41 AR type rubber cushion. The complete instrument weighs about 1.5 lb.

Summary

The limited frequency screening test provides a simple and accurate test for industry, military services, school testing programs, and the routine needs of the otolaryngologist, pediatrician, internist, and general practitioner. It is not necessary to make threshold audiograms to satisfy the needs of these programs or these physicians; it is sufficient to determine only whether a patient has normal hearing. Use of the proposed single and double frequency screening tests make it possible to determine, with a minimum of time, expense, and personnel, the presence or absence of impaired hearing.

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The Oto-chek used in this study is manufactured by the Ambco, Inc., Los Angeles.

VESICORECTOSTOMY

Arnold H. Franzblau, M.D., Charleston, S. C.

In recent years many excellent techniques have been developed for urinary tract diversion after surgical excision or because of congenital absence or certain neurogenic disorders of the bladder. In certain patients the bladder itself is intact and able to perform its normal function, but the urine cannot leave the bladder through its normal urethral channel; this condition is found in patients with urethral strictures that recur despite multiple attempts at excision and reconstruction of the urethra. In 1954, Moore[1] reported a new technique of lower urinary tract diversion by the creation of a permanent fistula between the rectum and the bladder in the presence of an intact anal sphincter. This he referred to as "vesicorectostomy." On the basis of Moore's initial article, Robbins[2] reported several cases in which this procedure was utilized with a slightly modified operative technique. With this information, vesicorectostomy was performed on the patient whose case forms the basis for this report. In certain selected cases it is believed that this procedure is indicated, and this paper is presented for the purpose of further calling the attention of the profession to this procedure.

Operative Technique

Preoperatively, the patient receives an intestinal preparation consisting of liquid diet for 72 hours and 1 Gm. of neomycin sulfate hourly for four doses and then 1 Gm. every four hours for the 24 hours immediately preceding surgery. A Levin tube is passed prior to surgery. The patient is placed in a modified dorsal lithotomy position with the thighs moderately flexed and abducted. An assistant inserts an anoscope into the rectum for counterpressure against the anterior rectal wall. Through a midline suprapubic incision the bladder is exposed extraperitoneally, and it is entered through an ample vertical incision. A 3-cm. transverse incision is made in the floor of the bladder just proximal to the trigone, very carefully avoiding the ureters, which are kept under constant visualization. The incision is carried down through all the layers of the floor of the bladder, thus exposing the rectovesical space. With the anoscope in the rectum for counterpressure, the anterior rectal wall is grasped and incised transversely for a corresponding distance through all its layers. The incised rectal mucosa is grasped, and the full thickness of the rectal wall, including the mucosa, is sutured to the full thickness of the floor of the bladder, including the mucosa, with through-and-through interrupted stitches of 000 atraumatic chromic absorbable surgical suture. This suture affords hemostasis in addition to creating the fistula. The rectovesical fistula thus created is about 2 cm. in diameter (fig. 1). A 30 F. 5-cc. Foley catheter is inserted into the bladder suprapubically, and the bladder is closed with a continuous suture of 1 chromic absorbable surgical suture. A penrose drain is placed to the prevesical space, and the wound is closed in layers with interrupted sutures of 1 chromic absorbable surgical suture to the rectus fascia, interrupted sutures of 00 plain absorbable surgical suture to the subcutaneous tissues, and interrupted sutures of 0000 silk to the skin. A dry sterile dressing is applied. A large (36 F.) mushroom catheter is placed into the rectum and left indwelling, to be connected to straight drainage.

Report of a Case

A 58-year-old male was admitted Dec. 17, 1956, with a periurethral abscess and multiple urethrocutaneous fistulas. The history began on Dec. 23, 1914, when, at the age of 16, he was initially seen in the genitourinary clinic of Roper Hospital with gonorrheal urethritis and chancroids, for which he was treated with copaiba (Lafayette's mixture) and methenamine (Urotropin) for 11 months.

The patient presented himself for treatment for the same condition in 1917 and in the summer of 1918. In October, 1918, he was noted to have a urethral stricture which was dilated to 16 F. with sounds. He was seen again in July, 1919, with acute urinary retention. During the next several months, he received urethral dilatations. The patient then was not seen until 1926, when he was again found to have urethral strictures. Blood serologic studies at this time revealed positive Wasserman and Kahn tests. He was treated for similar difficulties in 1934 and 1941, at which time a suprapubic cystostomy was performed for acute urinary retention due to impassable urethral stricture. Subsequently the urethra was dilated to 24 F. with sounds. Dilation was done in 1945 and 1949, and the patient was seen in October, 1950, with multiple urethrocutaneous fistulas and impassable urethral strictures, for which he refused surgery.

He was admitted in November, 1950, for incision and drainage of a periurethral abscess. At that time, he refused urethrotomy and was discharged in an extremely uncooperative state with the strictures still impassable to filiforms. When he was seen next in July, 1951, with a one-week history of periurethral abscess, his physical examination revealed urethral strictures and multiple urethrocutaneous fistulas. During this hospital stay, the urine was diverted with a cystostomy, and excision of the multiple urethrocutaneous fistulas, external urethrotomy, and urethral reconstruction were carried out. Patient was able to void with a good stream at the time of discharge and returned to the clinic irregularly for dilatations, only to return to the hospital in April, 1952, with a periurethral abscess and urethral stricture (which he claimed was secondary to a "straddle injury"). The abscess was drained and the stricture dilated, but following discharge the patient was not seen for five years.

In the fall of 1956, he was admitted to the surgical service for saphenous vein ligation but was transferred to the genitourinary service because of impassable urethral

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strictures and multiple urethrocutaneous fistulas. During this admission the patient underwent excision of the urethrocutaneous fistulas, external urethrotomy, and, again, urethral reconstruction. At the time of discharge the patient was noted to be voiding with a good stream. The patient returned to the clinic for dilatations on two occasions and then disappeared for six weeks, only to return with a filiform urethral stricture. This was progressively dilated up to 24 F. Several months later the patient was noted to have a recurrence of a fistulous tract in the left perianal area. This was incised in the clinic and treated with antibiotics and sitz baths. The fistulous tract continued to drain in spite of all attempts at therapy, and another tract soon appeared. The patient then came for his present admission.

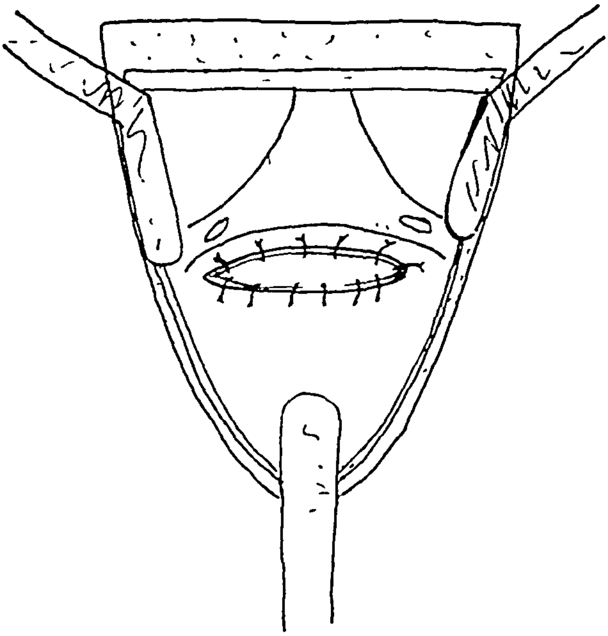

Fig. 1.—Diagram of appearance of floor of bladder after creation of vesicorectostomy.

Physical examination revealed a well-developed, well-nourished male in no apparent acute distress. He was noted to have the bilateral "saber shins" of congenital syphilis. The remainder of physical examination was essentially not remarkable, with the exception of the findings pertaining to the genitourinary tract. The right scrotum was enlarged three times normal size and was mildly tender. The mass transilluminated and apparently represented a hydrocele. There were multiple fistulous tracts in the perineum and in the right and left perianal areas, and small amounts of purulent material could be expressed from these. On rectal examination, the prostate was noted to be boggy, not tender, and enlarged 1+ to 2+. Urine culture revealed 70% Aerobacter aerogenes and 30% beta-hemolytic streptococci, both sensitive to nitrofurantoin (Furadantin). Intravenous pyelograms were essentially normal, with the exception of a large bladder calculus and multiple prostatic calculi (fig. 2). On Dec. 20, 1956, with the patient under general anesthesia, the bladder was opened, a shell-like bladder calculus was removed, and a vesicorectostomy was performed.

Postoperatively, the patient did well and urine drained through both the rectal and cystostomy catheters. He was maintained on a low-residue diet. On the fourth postoperative day the rectal tube was removed, and on the seventh postoperative day the sutures were removed from the wound. At this time the patient was noted to be leaking urine through the urethra, but this ceased after several days. On Jan. 3, 1957, the multiple urethrocutaneous fistulas were excised. It was noted that each fistulous tract arose from a large cavernous space, filled with purulent material, in the approximate region of the bulbous urethra. There was no identifiable urethra in the area of the bulb. At the termination of the dissection there was a large cavernous space lined with scar tissue and no normal tissue in the area with which to attempt to reconstruct the urethra or close it off. Accordingly, the space was packed with iodoform gauze and the wound was closed over the latter. The pack was removed on the fifth postoperative day, and the patient was given sitz baths in addition to antibiotics. The patient was afebrile with the exception of a temperature spike to 103 F (39.4 C) on the 10th day, which responded immediately to a change of antibiotic. The perineal sinus tract, at the site of the gauze pack, continued to drain slightly but appeared to be granulating inward slowly. The patient was discharged on Jan. 27, 1957, to be followed up in the clinic. The cystostomy tube was draining clear urine. The patient was voiding urine per rectum, and there was slight drainage of purulent material from the perineal sinus tract.

Several weeks later in the genitourinary clinic, the cystostomy tube was clamped as a trial, and the patient voided per rectum every two hours without difficulty. There was no urinary drainage per urethra. The cystostomy tube was removed, and the suprapubic sinus healed over rapidly. In the six months following the vesicorectostomy, the perineal fistulous tract continued to drain purulent material in variable amounts. Recently, the tract has been receiving irrigations of 5% solution of strong silver protein (Protargol), with considerable reduction in the quantity of the drainage. Should the tract continue to drain, a second attempt at excision will have to be made.

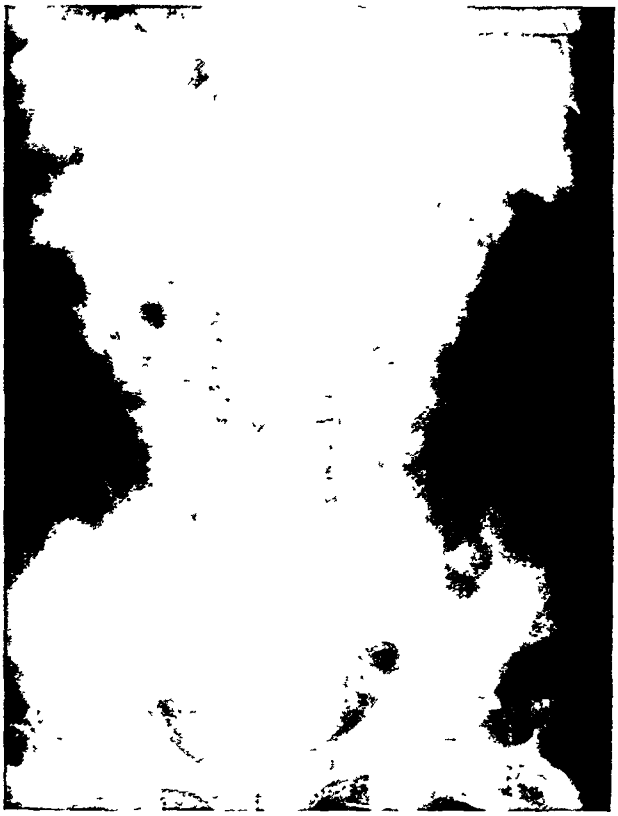

Fig. 2.—Preoperative pyelogram revealing normal upper tract and bladder calculus.

On June 12, 1957, intra[illegible] revealed prompt excretion and good [illegible] contrast medium in five minutes from both kidneys. The calyces were well cupped, and the renal pelvis and ureters appeared normal bilaterally. The contrast medium was noted to be draining from the bladder into the rectum (fig. 3). The blood urea nitrogen level at this time was 17 mg. per 100 cc. The patient is fully ambulatory at the time of writing and, with the exception of the annoyance of the drainage from the perineal sinus tract, is quite satisfied with the results of the vesicorectostomy.

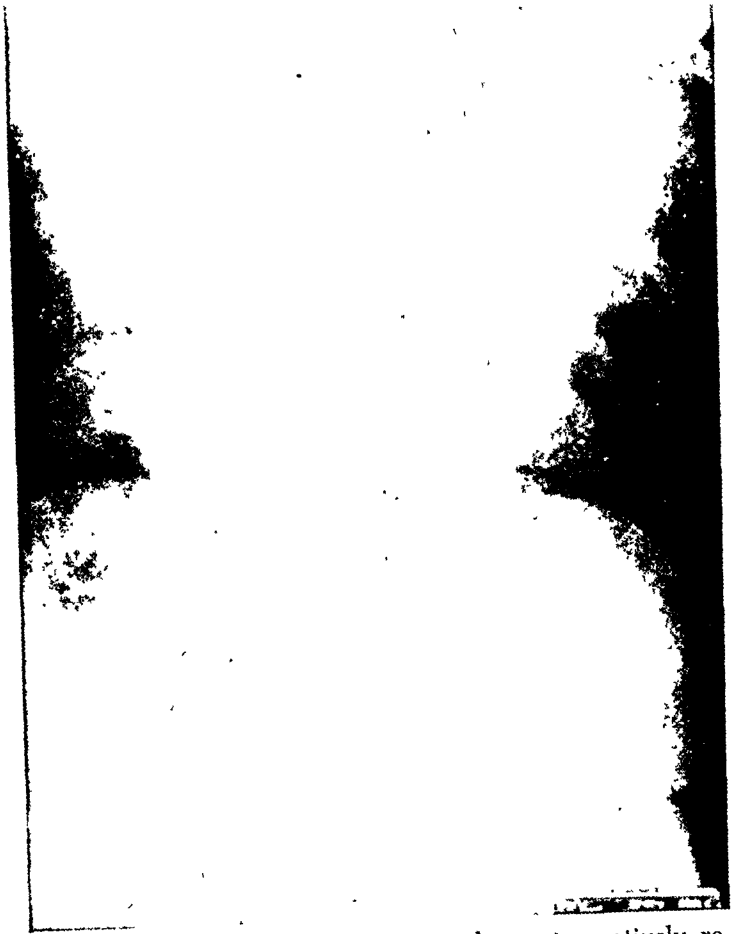

Fig. 3.—Pyelogram taken six months postoperatively revealing normal upper tracts and showing contrast medium escaping from bladder to rectum as a result of vesicorectostomy.

Comment

The above-described operative technique may perhaps be modified slightly in the future in the light of Robbins' article[2] (which was published about one month after the operation). It is felt that the suprapubic catheter drainage after surgery affords an additional measure of safety without any additional morbidity. Its use may, however, be modified in the future. In the case reported here, it was probably maintained longer than was necessary. Others[3] have recommended digital dilatation of the vesicorectostomy through the rectum. In this patient the high position of the floor of the bladder prevented this.

The indications for this procedure would seem to be any situation in which an intact bladder is present but there is a need for the diversion of urine from this bladder through a channel other than the urethra. An intact anal sphincter is, of course, necessary. The possible complication of severe cystitis has not been encountered, nor has pyelonephritis been noted. The patient has been instructed to void per rectum every two hours, and, with a large fistula on the floor of the bladder, it would seem that the bladder should not become overdistended with possible ureteral reflux. The "sphincter-like" action of the normal ureterovesical junction probably helps to prevent regurgitation of intestinal contents to the kidneys. In this regard, perhaps a preoperative cystogram and delayed cystogram would be indicated to rule out the possibility of ureteral reflux, which would contraindicate the procedure. Poor renal function, acute and chronic pyelonephritis, and such other renal abnormalities as hydronephrosis and calculus would also contraindicate vesicorectostomy.

Summary

The technique of creation of a permanent vesicorectal fistula, or vesicorectostomy, has been found useful in the treatment of patients with impassable urethral strictures. Vesicorectostomy was successfully carried out in a 58-year-old man with a periurethral abscess and multiple urethrocutaneous fistulas. Neither cystitis nor pyelonephritis occurred.

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3. References 1 and 2.

FREEDOM TO THINK.—There is a more important freedom than any of those mentioned in Mr. Roosevelt's famous four. It is the freedom to think. What good is freedom of speech without freedom to think? In this, science is the freest way of life I know of. It is free to think. It can entertain new ideas and concepts as no other way of life can. The politician must ask what the effect of a new concept will be on his party and on his political fortunes. The chauvinist must ask what the effect will be on his nation or race. The sectarian must ask whether the concept is truly orthodox, whether it falls within the tenets of his sect. The scientist asks only if it is true or if it shows promise as a working hypothesis.—R. S. Gill, Scientific Freedom, *Journal of Forensic Sciences*, January, 1958.

FURTHER OBSERVATIONS ON CYSTINOSIS IN THE ADULT

David G. Cogan, M.D., Toichiro Kuwabara, M.D., Cornelius S. Hurlbut Jr., Ph.D.
and
Virginia McMurray, Ph.D., Boston

In a recent publication,[1] several of us reported a patient with cystine crystals in the conjunctiva and cornea, a sign which is thought to be pathognomonic of systemic cystinosis. The chief interest in this case revolved around the fact that the patient was a healthy adult of normal physique, whereas the cystinosis of infancy results in renal rickets and usually death within the first one or two decades of life. Furthermore, our patient showed neither amino acid disturbance in the blood nor renal disturbance, which is characteristic of infantile cystinosis. In our previous article, the term Lignac-Fanconi syndrome was used synonymously with the term cystinosis. This was in keeping with the terminology employed by Bickel and coworkers.[2] Since then, our attention has been called to an article by DeToni,[3] in which he proposes the name Abderhalden-Kaufman-Lignac syndrome for this entity as being historically more accurate.

Since the publication of our preliminary report and, in part, on account of it, several aspects have come to light which warrant a further note. In the first place, our case was unique in that it was the only verified instance of cystinosis in an adult. We were, however, able to find and cite a case reported by Burki and Rohner[4] which was thought at the time to be cystinosis in an adult, but the conjunctival biopsy and sternal marrow were negative. Correspondence with Burki[5] has now indicated that this patient subsequently died of multiple myelomatosis. A small piece of cornea removed at autopsy showed deposits of paraprotein, such as has been found in other cases of multiple myeloma,[6] and it is now concluded that this was not a case of cystinosis. (Myelomatosis was ruled out in our patient by his age, 23 years, by his normal electrophoretic pattern of blood proteins, and by the repeatedly normal urinalyses.)

Secondly, we recontacted our patient and persuaded him, on the basis of the uniqueness of his case, to permit a sternal puncture, another conjunctival biopsy (this time for study by x-ray diffraction), and a skin biopsy. Smears of the sternal puncture showed a considerable number of crystals (fig. 1). These were vividly birefringent and mostly rod-shaped and tended to have a relatively uniform breadth of 2 to 3 μ with a variable length up to 10 μ. The variable length may have been due to fragmentation. The crystals were seen in fresh smears, smears fixed in 90% alcohol solution, or smears fixed in methyl alcohol and stained with Wright's solution. Staining by the von Kossa or Giemsa technique resulted in some distortion of the crystals. The crystals were extracellular and appeared to have given rise to no reáction. No such crystals were seen in control smears removed from patients with various other disease entities.

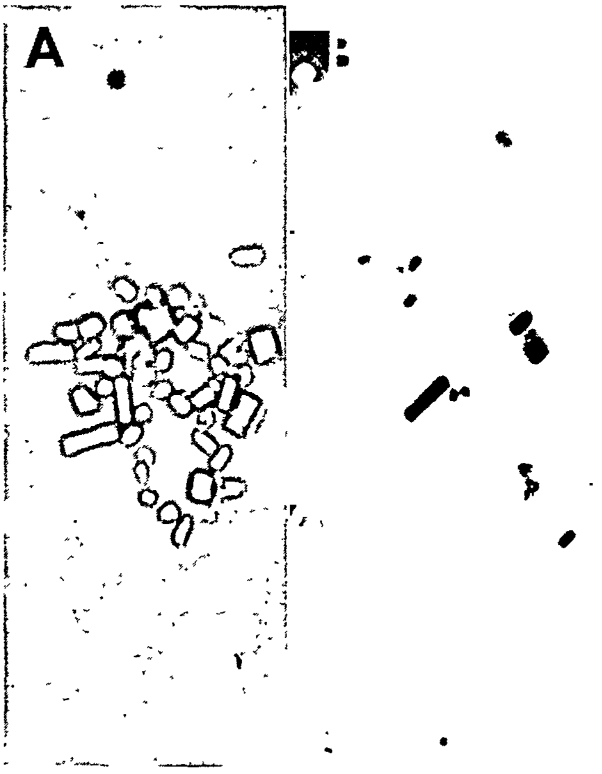

Fig. 1.—*A*, unretouched photograph of bone marrow smear showing cluster of crystals among red blood cells. Smear was fixed in alcohol and mounted in Permount (Fisher) but not stained. Photograph was taken with oil immersion. *B*, photograph of bone marrow smear taken with crossed polaroids showing scattered birefringent crystals.

The clot obtained by sternal puncture was fixed in alcohol, dehydrated, and embedded in paraffin. It showed the same type of crystals as had been seen in the smear.

The conjunctival specimen, removed from the eye opposite that previously biopsied, was fixed in 95% alcohol solution and prepared en bloc for

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From the Howe Laboratory of Ophthalmology, Harvard Medical School, the Massachusetts Eye and Ear Infirmary, and the Department of Mineralogy, Harvard University.

study by x-ray diffraction. This specimen was further dehydrated in 100% alcohol and then passed through ether. It was blotted dry, fixed to a glass slide with collodion, and subjected to x-ray diffraction with use of a Norelco diffractometer. Subsequently, the specimen was prepared for crystallographic examination according to the x-ray powder diffraction technique. Similar diffractometric and powder techniques were employed with use of known samples of L-cystine (C. P.) and a piece of conjunctiva removed from a patient without evidence of cystinosis.

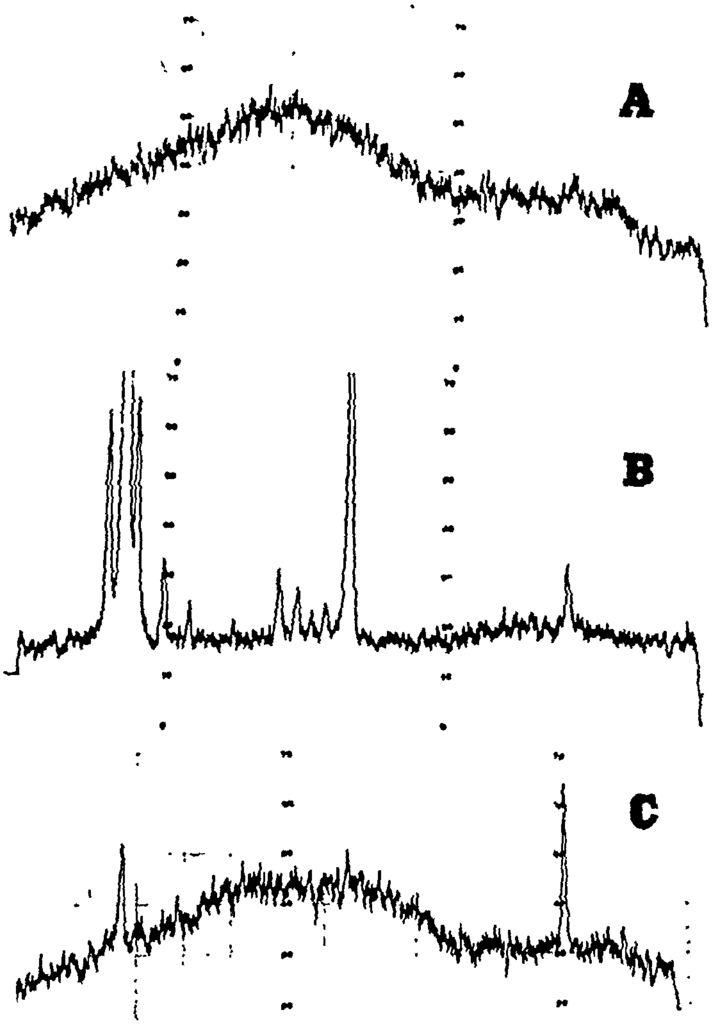

Fig. 2.—Diffractometric graph of *A*, normal conjunctiva; *B*, known L-cystine crystals; and *C*, conjunctival biopsy of patient. While varying in magnitude, peaks of test specimen (*C*) coincide with those of L-cystine (*B*). Normal conjunctiva, on the other hand, shows no significant peaks.

In the diffractometer graph of the test sample the same strong peaks appeared as in the control graph (fig. 2), which is interpreted as unequivocal evidence for the identity of the crystals as cystine. The powder technique also gave a similar "signature" for the test and control samples, but owing to the small number of crystals the photograph is not as striking for the test sample as for the control. The control sample of normal conjunctiva gave no indication of cystine crystals.

The skin specimen, removed from the axilla, was sectioned in the fresh-frozen state and after fixation in 90% alcohol. No crystals were seen. The possibility that crystals in the skin would have been dissolved out by the procainamide (Novocain) infiltration seems unlikely since the conjunctival tissue was similarly obtained after procainamide infiltration.

Comment

Further study of the case of adult cystinosis has shown that the characteristic crystals were also found in the sternal marrow but not in the skin. Adding to the previous evidence of chromatography and solubility, further identification of the crystals has been obtained through x-ray diffractometry. There would appear to be little or no doubt, therefore, that the crystals were cystine.

Through the kind offer of Dr. C. E. Dent, who has been one of the outstanding investigators of infantile cystinosis,[7] we obtained further data on the urine of our patient. The urinary amino acid chromatogram done by Dr. Dent was normal. There was no aminoaciduria, and the pattern, which mainly was composed of glycine, taurine, and histidine, was also well within the normal range.

Summary and Conclusions

Further information on the case of adult cystinosis previously reported has indicated that (1) the characteristic crystals were also present in the sternal marrow, although not in the skin; (2) the conjunctival crystals were shown to be cystine by x-ray diffractometry; and (3) this is the first verified case of adult cystinosis to have been reported.

The significance of our case, aside from its uniqueness, is the recognition of an adult form of cystinosis. Contrary to the fatal prognosis of the infantile form, cystinosis in the adult is compatible with a normal physique and general good health.

243 Charles St. (14) (Dr. Cogan).

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COUNCIL ON DRUGS

Report to the Council

The Council has authorized publication of the following report. Nonproprietary terminology is used for all drugs that are mentioned; when such terminology is not considered to be generally well known, its initial appearance is supplemented by parenthetic insertion of names known to be applied to commercial preparations.

H. D. Kautz, M.D., *Secretary.*

CURRENT STATUS OF THERAPY IN PEPTIC ULCER

Joseph B. Kirsner, M.D., Ph.D., Chicago

Introduction

Peptic ulcer is one of the important medical problems of our time. Its incidence in the general population is not known precisely but in the United States probably approximates 10% on a lifetime basis. The annual mortality has been estimated in excess of 10,000 persons.

Peptic ulcer is the product of an abnormal physiology characterized by inability of localized areas of the stomach and duodenum to withstand the digestive action of acid gastric juice. In gastric ulcer, the output of hydrochloric acid is normal or low, but its corrosive effect presumably surpasses the diminished resistance of the gastric mucosa. In duodenal ulcer, the secretion of hydrochloric acid is excessive, two to four times greater than normal, and its digestive capacity exceeds the apparently normal resistance of the duodenal mucosa; however, localized areas of vulnerability also may exist in the duodenum, as in the stomach. The hypersecretion in duodenal ulcer is demonstrable for 1 or 24 hours, between meals, during the night, and after the ulcer has healed. Its mechanism is not established completely. Anatomically, it seems to be correlated with an increased number of parietal cells in the fundus and body of the stomach. Physiologically, histamine, acetylcholine, hormonal factors, including gastrin from the antrum, and adrenocortical hyperfunction have received consideration. Present evidence tends to emphasize the role of vagal hyperactivity, acting upon a more responsive gastric secretory mechanism; however, other factors, chemical and humoral, undoubtedly are involved. Peptic ulcer occurs only among individuals capable of secreting acid and only in those areas of the digestive tract exposed to hydrochloric acid, namely, the lower portion of the esophagus, the stomach, the first portion of the duodenum, the jejunum in a patent gastroenterostomy, and in a Meckel's diverticulum containing acid-secreting gastric mucosa. Most techniques for producing ulcers experimentally involve the overproduction of hydrochloric acid or interference with the usual mechanisms for neutralizing and buffering the acid. The role of hydrochloric acid in the pathogenesis of peptic ulcer thus may be compared to that of the essential catalyst in a chemical reaction; other ingredients (etiological factors) are involved in the process, but, in the absence of the hydrochloric acid, the reaction cannot proceed.

Tissue Resistance

A priori, tissue vulnerability, localized or diffuse, should be a significant factor in the development of peptic ulcer. However, little is known of the nature of tissue resistance. Alterations in the rate of regeneration of epithelial cells, in the mucous barrier and in the vascular supply to the stomach and duodenum, may be important; other mechanisms probably are involved, but their identity is not known.

In the absence of a specific cause, the treatment of peptic ulcer emphasizes protection of the gastroduodenal mucosa from the digestive action of hydrochloric acid. This objective probably would be accomplished by increasing tissue resistance. However, there is no established procedure for improving the defenses of the stomach and the duodenum directly. The animal tissue extracts, hormonal substances, extracts of pregnant mares' urine, cabbage juice, chlorophyll, and other materials of uncertain composition suggested for this purpose are of no value. The resistance of the stomach and the duodenum probably is enhanced indirectly by improving the general health of the patient, by eliminating gastric irritants in food, drink, and medication (alcohol, salicylates), and by avoiding excessive physical and emotional stress.

Therapeutic Objectives

The complete elimination of hydrochloric acid would abolish peptic ulcer, regardless of tissue susceptibility and other possible etiological factors. However, no method, pharmacological, medical, or surgical, except total gastrectomy, consistently produces complete and permanent anacidity; hence,

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no procedure per se regularly cures the disease. Therapy emphasizes the effective neutralization or inhibition of hydrochloric acid and concurrent elimination of peptic activity. The clinical objectives are relief of pain, complete healing of the ulcer, and prevention of complications and recurrences. Because of the natural tendency to healing and recurrence, accurate evaluation of treatment in peptic ulcer requires prolonged and well-controlled observation for at least two years and preferably longer.

Therapeutic Management

Diet.—There is no satisfactory evidence relating the usual peptic ulcer to abnormal protein metabolism or to a dietetic deficiency requiring special nutritional supplements. Thus, there appears to be no scientific basis in man for the use of preparations such as a mixture of extracts of cattle liver, brains, and adrenals, together with dehydrated milk and cream, choline hydrochloride, vitamins, and minerals (Exul). The protein-vitamin-mineral supplement (Sustagen) and similar preparations, administered as a drink or intragastric drip, provide additional calories and may buffer hydrochloric acid; however, they are not necessary when the intake and digestion of food are normal. The ulcer patient is capable of eating a more liberal diet than has been advocated in the past. Restriction of food does not necessarily cure peptic ulcer. On the other hand, disregard of dietary considerations neglects a useful means of relieving distress, for certain foods may irritate the gastroduodenal mucosa and contribute to ulcer pain.

The dietary management of peptic ulcer emphasizes frequent feedings of bland foods, avoids mechanical, chemical, or thermal irritants, provides adequate amounts of proteins, carbohydrates, calories, minerals, and vitamins, and assists in the neutralizing and buffering of the gastric contents. The diet includes whole milk and 22% cream, or half and half (12% cream), taken as an equal mixture in quantities of 90 to 120 cc. (3 or 4 oz.) hourly from 7 a. m. to 7 p. m. Chocolate, malt, and protein supplements may be added if a gain in weight is desired. Skimmed milk may be substituted if the patient is obese. In the absence of gastric retention, additional food is administered in the form of six feedings daily. The feedings initially are selected from the following items: cooked cereals, soft boiled eggs, toast, butter, strained cream soups, custards, puddings, plain cookies, jello, and ice cream. After 7 to 10 days of complete relief from ulcer distress, or sooner in the absence of obstruction, the feedings are replaced by a three-meal diet consisting of a substantial breakfast and noon meal and a moderate supper; a small feeding later in the evening also is permissible. The meals are selected from the following list:

- Cereals
  - Cream of wheat
  - Farina
  - Refined rice
  - Rice krispies
  - Puffed rice
  - Rice flakes
  - Macaroni
  - Noodles
  - Spaghetti
  - Vermicelli
  - Corn flakes
  - Oatmeal

- Eggs
  - Soft boiled
  - Soft scrambled
  - Soft omelet
  - Poached
  - Soft baked
  - Hard cooked

- Cheese
  - Cream
  - American
  - Swiss
  - Cottage

- Milk, Milk Products
  - Buttermilk
  - Milk
  - Cocoa
  - Ovaltine
  - Eggnog
  - Butter

- Beverages (1 cup)
  - Tea
  - Sanka or Kaffe Hag
  - Coffee
  - Postum

- Potatoes
  - Baked Irish
  - Mashed Irish
  - Au gratin
  - Escalloped
  - Boiled

- Cooked or Canned Fruits
  - Prunes
  - Peaches
  - Applesauce
  - Plums
  - Apricots
  - Pears
  - Baked apples (no skin)
  - Pineapple

- Raw Fruits
  - Bananas
  - Oranges (juice, sections, whole)
  - Grapefruit

- Cooked or Canned Vegetables
  - Asparagus
  - String beans
  - Carrots
  - Spinach
  - Sweet potatoes
  - Peas
  - Tomatoes

- Breads
  - White
  - Toast
  - Melba toast
  - Toasted crackers
  - Croutons
  - Bread sticks
  - Milk toast
  - Biscuits of white flour
  - Plain rolls
  - Zwieback
  - Soda

- Soups
  - Consommé
  - Chicken broth
  - Vegetable
  - Rice, creamed
  - Potato, creamed
  - Celery, creamed
  - Tomato, creamed
  - Asparagus, creamed
  - Mushroom, creamed

- Fish
  - Salmon, creamed
  - Tunafish, creamed
  - Whitefish, creamed
  - Whitefish, baked
  - Cod
  - Haddock
  - Mackerel
  - Halibut
  - Flounder

- Meats
  - Crisp bacon
  - Chicken
  - Turkey
  - Beef
  - Lamb
  - Meat loaf
  - Steak
  - Veal
  - Hamburger

- Desserts
  - Vanilla custard
  - Caramel custard
  - Floating island
  - Rice custard
  - Bread pudding
  - Tapioca pudding
  - Cornstarch pudding
  - Plain jello
  - Cottage pudding
  - Angel food cake
  - Ice-box cake
  - Plain cake
  - Lady fingers
  - Sponge cake
  - Arrowroot cookies
  - Ice cream, plain

- Miscellaneous
  - Jelly
  - Marmalade

All foods should be well cooked and chewed thoroughly. One cup of coffee in the morning and one or two cups of tea during the day may be permitted. The following foods should be avoided: seasonings, spices, meat extractives, alcoholic and carbonated drinks, cabbage, turnips, corn, nuts, sausage, pork and pork products (except bacon), and fried, very hot, or very cold foods. The intake of milk and cream is decreased gradually from hourly intervals to two-hour intervals and ultimately to between meals. The bland three-meal diet is continued indefinitely, with further additions as indicated by the progress of the patient. The casual suggestion to "watch your diet" or "avoid irritating foods" is vague and ineffectual. The program should be outlined clearly, preferably in a printed list of those foods to be eaten and those to be avoided.

Antacids.—The purpose of antacid therapy is constant neutralization of the acid gastric content. The ideal antacid theoretically should possess these advantages: prolonged, effective neutralization when administered orally in acceptable amounts, absence of subsequent stimulation of secretion, no untoward systemic effects such as alkalosis, no cathartic or constipating action, no interference with digestive or absorptive processes, palatability, and low cost. These qualities each are desirable, but they are not of equal importance. Serious toxic effects would obviate the usefulness of an otherwise potent antacid. The absence of constipation or diarrhea is of secondary clinical value when there is little or no neutralizing action. Effective neutralization is maintenance of the pH of the gastric content between 4.0 and 5.0, or higher; at this hydrogen ion concentration, acid and peptic activity are practically absent. On the other hand, peptic ulcer probably heals with less complete control of gastric acidity.

The ideal antacid thus far has not been developed. Neutralizing efficiency in patients with duodenal ulcer is limited by the excessive rate of gastric secretion and by the rate of gastric emptying. On the other hand, antacids neutralize hydrochloric acid at least partially, relieving pain and facilitating healing. Many preparations are available. The most potent compound probably is calcium carbonate, administered in quantities of 2 to 4 Gm. hourly during the day and evening (7 a. m. to 9 p. m.). The principal disadvantage of calcium carbonate therapy is constipation, especially in older patients; this usually can be corrected by substitution of the more laxative magnesium carbonate in amounts required by the individual patient. Careful attention to bowel function is necessary with all types of antacid therapy.

Therapy with milk and calcium carbonate may be complicated infrequently by the hypercalcemic syndrome. This disorder is characterized clinically by weakness, headache, distaste for milk and food, and by nausea and vomiting. The chemical features are elevation of the serum calcium and blood urea nitrogen levels and temporarily depressed renal function. This complication is more likely to occur in older patients with hypertension and preexisting impairment of renal function, or in those in whom renal physiology is disturbed by gastrointestinal hemorrhage or electrolyte and fluid depletion. It has been observed also in patients taking milk and cream and sodium bicarbonate only. The syndrome subsides rapidly after discontinuance of milk and alkali and the intravenous administration of isotonic sodium chloride solution or dextrose and water for injection.

Combinations of calcium carbonate with glycine or calcium caseinate do not appear to offer special neutralizing advantages. Magnesium carbonate and magnesium oxide are potent antacids; because of their laxative effect, they are prescribed chiefly to counteract the constipating action of the ulcer regimen. Tribasic calcium phosphate, tribasic magnesium phosphate, magnesium trisilicate, magnesium hydroxide, magnesium tartrate, calcium tartrate, and dihydroxyaluminum sodium carbonate, in doses of 2 to 4 Gm. hourly, neutralize gastric acidity in varying degrees. Aluminum hydroxide (Alkagel, Al-U-Creme, Aluminum Hydroxide, Amphojel, Creamalin), aluminum phosphate (Phosphaljel), and basic aluminum carbonate (Basaljel), taken alone in liquid or gel form in doses of 8 to 16 cc., and in various mixtures, partially neutralize gastric acidity. Their capacity to inactivate pepsin in vivo seems no greater than that of calcium carbonate; the astringent, demulcent, and coating properties attributed to them are not susceptible to scientific measurement in man. Aluminum hydroxide increases the excretion of phosphate in the feces; however, the serum electrolytes are not altered. The constipating effect of aluminum hydroxide may be counteracted with administration of magnesium trisilicate or magnesium hydroxide. Hydrated sodium aluminum silicate, "nonreactive" aluminum hydroxide, and dihydroxyaluminum aminoacetate (Alglyn, Alzinox, Aspogen, Dimothyn, Doraxamin, Robalate) do not appear to offer any special advantages.

Anion exchange resins, such as polyamine-methylene resin (Exorbin, Resinat), are large insoluble bases with the capacity to absorb the anion of an acid, forming an insoluble resin salt. In alkaline intestinal contents the anion exchange is reversed, and the resin is restored to its original state. Various resins, alone or in combination with antacids, are available; they may lower gastric acidity partially in man. Bismuth salts and hog gastric mucin have no neutralizing value. Sodium carboxymethylcellulose (Carmethose, CMC Cellulose Gum, Sodium Carboxymethylcellulose, Thylose Sodium), alone or in combination, does not offer any special advantages. Protein hydrolysates (Aminonat, Caminoids) given orally may decrease acidity temporarily, but not impressively. The antacid effect of sodium bicarbonate is pronounced but transient; it is not prescribed because of the possibility of alkalosis when taken in large quantities, especially in patients with impaired renal function.

In addition to powders and liquids or gels, some antacids are available also as tablets; these preparations contain aluminum hydroxide, magnesium trisilicate, calcium carbonate, magnesium oxide, or magnesium carbonate, alone, in various quantities and mixtures, or combined with resins, milk proteins, and vitamins. Antacid tablets are inferior to powdered or liquid preparations because of the smaller amounts entering into the reaction with hydrochloric acid; however, rapidly disintegrating tablets may obviate this difficulty. Their principal usefulness is as adjunct antacid medication taken away from home or at work, and their effectiveness is dependent upon adequate dosage. A compressed tablet containing milk solids with 220 mg. of magnesium trisilicate, 120 mg. of magnesium oxide, 120 mg. of calcium carbonate, and 30 mg. of magnesium carbonate (Nulacin) also is available. The tablet is kept between gum and cheek and is allowed to dissolve gradually by continuous sucking; 10 to 16 tablets thus may be taken daily. This medicament may neutralize acid more effectively than do standard tablets, but the amounts of antacid are very small. The continuous retention of a large tablet in the mouth may become a tedious ritual, acceptable only to occasional patients.

Antacids act locally upon the gastric contents; since they do not influence the acid-secreting cells, their neutralizing effect is temporary and disappears when the medicament is discontinued. Since the healing time of peptic ulcer may be prolonged and since ulcers often recur, antacid therapy must be prolonged. The hourly schedule is continued until the ulcer has healed completely. The antacid then is prescribed at intervals of two and three hours, and, subsequently, once or twice between meals and during the evening; many patients maintain this latter program indefinitely. The administration of small quantities of mild antacids immediately after meals, a not uncommon practice, is impractical and ineffective, since the food alone may neutralize acid during this period, and the intervals between medication are too long. If antacids are to be prescribed only occasionally, they are more useful several hours after meals when the buffering effect of food has been dissipated.

Gastric acidity also may be neutralized by the continuous administration of milk and cream and alkali, administered through an intragastric tube. One liter of milk containing 5 Gm. of sodium bicarbonate may be administered every eight hours. Another solution is prepared by mixing 100 cc. of aluminum hydroxide or aluminum phosphate gel with 300 or 400 cc. of warm tap water; it is administered at a rate of 15 to 20 drops per minute; 1,500 to 3,000 cc. of the diluted suspension may be given in 24 hours. Food supplements may be given similarly as an additional source of calories for the nutritionally depleted patient. For example, one pound of the previously mentioned protein-vitamin-mineral supplement in one-quart solution provides 300 Gm. of carbohydrate, 150 Gm. of protein, 15 Gm. of fat, and 1,750 calories. It is administered at the rate of 80 to 100 drops per minute. The intragastric drip may be maintained for the 12-hour night period or continuously for as long as 7 to 10 days. The procedure has been recommended in patients with gastric hypersecretion and severe ulcer pain not controlled by ordinary measures, and occasionally in the treatment of massive hemorrhage; it is contraindicated in the presence of pyloric obstruction.

Gastric Antisecretory Compounds.—Diet and antacids do not control gastric acidity in peptic ulcer completely or continuously. Furthermore, many patients are reluctant to continue such a meticulous program indefinitely. Interest in anticholinergic medication is based upon the theoretical possibility of prolonged suppression of acid secretion, permitting a more liberal program. Anticholinergic drugs interfere with the transmission of nerve impulses mediated by acetylcholine at the neuroeffector junctions of postganglionic cholinergic nerves. Their use in peptic ulcer is based upon the concept that parasympathetic (vagal) hyperactivity is chiefly responsible for the gastric hypersecretion of duodenal ulcer and the expectation that these compounds will suppress the neurogenic mechanism. Actually, other phases of gastric secretion also may be influenced by these agents. Most anticholinergic drugs also inhibit gastrointestinal motility and diminish muscle spasm. However, this effect, although it may contribute to the relief of abdominal pain, is not essential to the healing of peptic ulcer.

Average doses of tincture or powdered extract of belladonna do not inhibit acid secretion significantly in patients with peptic ulcer. Atropine sulfate, 0.5 mg. given three or four times daily by mouth, is partially effective; the same dosage given intramuscularly reduces the volume of secretion and the output of acid occasionally. Systemic manifestations of parasympathetic inhibition are frequent with dosages sufficient to inhibit gastric secretion in man. The chief usefulness of atropine and similar compounds in ulcer therapy may be to delay gastric emptying, permitting a longer period of interaction between acid and antacid. Synthetic atropine substitutes, including amprotropine (Syntropan) phosphate, homatropine methylbromide (Malcotran, Mesopin, Novatrin), adiphenine hydrochloride (Trasentin), dibutoline (Dibuline) sulfate, and dicyclomine (Bentyl) hydrochloride, are less effective than atropine. The quaternary ammonium compounds, tetraethylammonium (Etamon) chloride or tetraethylammonium bromide, administered parenterally, and hexamethonium (Bistrium, Esomid, Hexameton, Hiohex, Methium) salts, prescribed orally, may inhibit acid temporarily. However, these drugs cause disturbing side-effects, including postural hypotension and intestinal atony, and are not intended for use in ulcer therapy.

Methantheline (Banthine) bromide temporarily suppresses gastric acidity when injected intramuscularly in doses exceeding 0.03 mg. per kilogram of body weight. The antisecretory effect after oral administration is less impressive. Single oral doses of 50 or 100 mg. of methantheline bromide may lower the volume of secretion; however, the concentration of hydrochloric acid remains unchanged. Dosages of 50 or 100 mg. given orally four times daily may provide symptomatic relief, but side-effects are common. Peptic ulcer may recur during the use of methantheline bromide; patients occasionally appear to develop a tolerance to the medication. The antisecretory effect of diphemanil (Prantal) methylsulfate resembles that of methantheline bromide. However, side-effects are less frequent, and 400 to 800 mg. or more may be taken by mouth daily without apparent discomfort.

Many new gastric antisecretory compounds have been developed. Some of these include the following agents.

Drug	Suggested Daily Dose for Adults, Mg.
Benzomethamine (Cotranul) chloride	400
Clidinium (Marplan) bromide	20-25
Hexocyclium (Tral) methylsulfate	75-100
Homatropine (Malcotran, Mesopin, Novatrin) methylbromide	100-200
Methscopolamine (Lescopine, Pamine) bromide	15-30
Methscopolamine (Skopolate) nitrate	6-12
Oxyphenonium (Antrenyl) bromide	40
Penthienate (Monodral) bromide	15-30
Pipenzolate (Piptal) methylbromide	25
Piperphenamine (Darstine) bromide	400
Propantheline (Pro-Banthine) bromide	75-240
Tricyclamol (Elorine, Tricoloid) methylsulfate	200-400
Tridihexethyl (Pathilon) iodide	200

Anticholinergic compounds are much more potent when administered intramuscularly than orally, but parenteral therapy, except in occasional hospitalized patients, is not practical. Since they are more effective against basal-stimulated secretion than against food-stimulated secretion, the medication is taken before meals. Increased amounts, two or three times larger than average, are prescribed at bedtime in an effort to lower the excessive nocturnal gastric secretion. Since the action of these drugs is limited to the period of administration, they must be taken continuously. The objective in peptic ulcer is prolonged inhibition of gastric secretion; therefore, treatment is maintained for long periods of time. The important considerations in anticholinergic therapy are the use of sufficient quantities and sustained regular use of the medicament.

No single anticholinergic compound excels in gastric inhibitory capacity, clinical tolerance, and therapeutic value, although several appear to be more effective than the majority; these include methscopolamine, propantheline, penthienate, homatropine, hexocyclium, and several additional compounds now under study. In general, the drugs that lower acidity most effectively also tend to produce systemic manifestations of parasympathetic inhibition. The symptoms include dryness of the mouth, blurring of vision, constipation, slowing of the urinary stream, headache, drowsiness, heartburn, tachycardia, choking sensation, and mental confusion.

The ideal gastric antisecretory agent, suppressing acidity for long periods of time after oral administration, without development of tolerance and with minimal or no side-effects, thus remains to be synthesized. Present compounds do not produce a true "medical vagotomy." However, they are superior to belladonna, atropine, methantheline, and diphemanil. Several preparations, administered orally, may decrease acid secretion, at least temporarily. As adjuncts to antacids, they probably facilitate more efficient neutralization of the gastric contents; and, in occasional patients at least, they may benefit not only the immediate course but also the long-term course of peptic ulcer. On the other hand, their value in preventing the complications of peptic ulcer and in decreasing the need for surgery has not been established. The use of anticholinergic drugs alone in the management of peptic ulcer is not recommended. These compounds are contraindicated in the presence of pyloric obstruction, incipient glaucoma, prostatic hypertrophy, and cardiospasm. The continued synthesis of new preparations indicates that the chemical possibilities in this field have not been exhausted.

Ineffective Compounds.—The available antihistaminic compounds do not lower gastric acidity significantly in man and are of no value in the treatment of peptic ulcer. Endocrine preparations, including parathyroid extract, posterior pituitary extract, enterogastrone, urogastrone, sex hormones, and desoxycorticosterone acetate (Cortate, Decortin, Decosterone, Doca Acetate, Percorten), do not reduce gastric acidity significantly in patients with duodenal ulcer. Compounds inhibiting the enzyme carbonic anhydrase may lower the output of hydrochloric acid after intravenous administration. However, large quantities of carbonic anhydrase inhibitors, such as acetazolamide (Diamox) given orally, do not suppress gastric secretion significantly or continuously in patients with duodenal ulcer.

In the absence of a specific cure, the number of alleged ulcer remedies remains enormous. Many have been discredited. Current evidence indicates that the following substances also should be discarded for this purpose: detergents such as sodium alkyl sulfate, urea-formaldehyde resins, thixotropic gels, bile salts, histidine, extracts of pregnant mares' urine, extracts of animal stomach, duodenum, and colon, chlorophyll, and cabbage juice. Surface-coating agents that theoretically protect the ulcer from hydrochloric acid, such as emulsified dimethylpolysiloxanes, have not been developed for clinical use.

Gastric Aspiration.—Nightly aspiration of the stomach with an Ewald or Levin tube is useful in hospitalized patients with gastric retention, since it removes a considerable quantity of acid content, otherwise bathing the ulcer and contributing to its activity. Gastric aspiration also is an effective method of relieving severe ulcer distress, and it may provide important information regarding the management of patients with retention. A decrease in the nightly aspiration to a volume of 90 to 120 cc. suggests that inflammation, edema, and spasm may be causing the obstruction, rather than cicatricial stenosis. Persistently large aspirates, on the other hand, indicate organic obstruction, necessitating surgical treatment.

Roentgen Irradiation of the Stomach.—Mild roentgen irradiation of the stomach may be utilized as adjunct therapy for the purpose of decreasing or suppressing completely the secretion of hydrochloric acid. Approximately 1,600 to 2,000 r, total depth dose, is directed in 10 divided applications to the fundus and body of the stomach, over fluoroscopically outlined anterior and posterior portals. The inhibitory effect of irradiation upon gastric secretion depends upon the destruction of parietal cells. The development of anacidity is followed invariably by complete healing of the ulcer and by no recurrence for the duration of the anacidity. Although the degree of secretory inhibition is quite variable, the clinical course often seems distinctly benefited. Harmful effects have not been observed. Gastric irradiation also has been combined with the surgical procedure of antroduodenectomy. Approximately two months after operation, a depth dose of 2,000 r is delivered in divided amounts during a period of three weeks. Roentgen irradiation of the stomach, despite favorable reports, thus far has not been widely used as a therapeutic adjunct in peptic ulcer. The procedure is not employed in children or young men and women. Its primary indication is for recurrent peptic ulcer not consistently controlled by adequate medical management in individuals above the age of 45 years.

Special Problems

Physical and Emotional Stress.—The admonition to treat the patient as well as his ulcer is not a trite remark. Excessive physical fatigue and prolonged emotional stress may increase the secretion of hydrochloric acid and the susceptibility of the gastroduodenal mucosa to injury. Rest and relief of emotional tension, consequently, are important adjuncts in therapy. The needs vary with the individual; some patients can adjust their daily routine to obtain more rest without discontinuing their work; others respond more effectively to a vacation away from home. Hospitalization for several weeks is desirable in patients with persistent severe ulcer distress and especially in the management of recurrent or complicated ulcers. Hospitalization provides an opportunity for careful regulation of therapy and more thorough indoctrination of the principles of treatment; it also removes the patient, at least temporarily, from the stress-producing environment.

Management of the emotional problems requires identification of the disturbing factors, domestic, social, or environmental, and intelligent efforts at their control by avoidance, "ventilation" of the problem, reorientation of the patient, or release of tension in pleasant recreational activities. The ultimate goals are the establishment of regular habits and a life of moderation. The support provided by the interested, friendly, yet objective physician may be helpful in this regard. Formal psychotherapy usually is unnecessary. Mild sedation with 30 mg. of phenobarbital given four times daily promotes relaxation and rest; sedatives at night are useful in ensuring an adequate amount of sleep. "Tranquilizing" drugs also are prescribed for this purpose, alone or combined with anticholinergic medication. They are useful in occasional patients but do not appear to have any special advantages in ulcer therapy. Chlorpromazine (Thorazine) hydrochloride given in large amounts may decrease gastric secretion; on the other hand, large doses of reserpine (Rauloydin, Raurine, Reserpine, Reserpoid, Roxinoid, Sandril, Serpasil, Serpiloid) given orally may increase the output of hydrochloric acid.

Tobacco, Alcohol, and Ulcerogenic Drugs.—There is no conclusive evidence at present that average smoking increases gastric secretion significantly. The use of tobacco by ulcer patients is dealt with most practically on an individual basis. Moderate smoking seems without harm in many instances. Excessive smoking, on the other hand, is undesirable, perhaps because of the decreased intake of food and diminished neutralization of gastric acidity. In such instances, the habit should be discouraged. The recommendation of complete abstinence is preferable to the ineffectual suggestion of "decreasing" the quantity of tobacco. Excessive smoking ordinarily reflects increased nervous tension; the important problem, therefore, is relief of the emotional stress.

Since alcohol tends to increase the secretion of hydrochloric acid, its use should be avoided. Excessive drinking of coffee may irritate the gastroduodenal mucosa and reactivate peptic ulcer. Numerous medicaments may increase gastric secretion, irritate the stomach and the duodenum, and predispose the patient to the recurrence or new development of peptic ulcer, with bleeding. These compounds include salicylates, corticotropin (Acthar, Corticotropin, Depo-Acth), adrenal cortical steroids including prednisone (Deltasone, Deltra, Meticorten) and prednisolone (Delta Cortef, Hydeltra, Meticortelone, Sterolone), phenylbutazone

(Butazolidin), and reserpine. They should be avoided, if possible, in patients with known peptic ulcer or administered in conjunction with antacids.

Benign Gastric Ulcer

The foregoing principles of treatment apply to benign gastric ulcer as well as to duodenal ulcer. However, several aspects of this problem require additional comment.

Gastric ulcer resembles duodenal ulcer in symptoms and course. The pain mechanism, namely, acid irritation of exposed nerves in the ulcer crater, is the same. In contrast to duodenal ulcer, the output of hydrochloric acid in gastric ulcer is normal or low. Nevertheless, the complete and permanent absence of acid, developing "spontaneously," induced by gastric irradiation or after gastric resection, leads to complete healing. The therapeutic objectives, therefore, are identical with those in duodenal ulcer. The two principal differences are the differentiation of benign ulcer from malignant ulcer and the possible malignant transformation of benign gastric ulcer. The differentiation of benign from malignant ulcer, although difficult, is possible in most cases when all diagnostic methods are utilized, including x-ray, gastroscopy, and exfoliative cytology. Neoplastic transformation of benign gastric ulcer, a theoretical possibility, occurs rarely, if ever.

All patients with gastric ulcer should be hospitalized. Medical management is permissible when the total evidence indicates a benign ulcer and when the course of the lesion can be observed carefully at frequent intervals. The therapeutic test may be maintained for four to eight weeks, with periodic reevaluation; however, two or three months may be required for total healing of a benign ulcer. Many gastric ulcers heal completely during adequate treatment. Nevertheless, medical therapy is not as consistently effective as is desirable, and recurrences are frequent. On the other hand, partial gastric resection is successful in the great majority of cases. The recurrence rate is low because of the subnormal secretion of hydrochloric acid. Gastric resection is indicated under the following conditions: (1) inability to exclude malignant ulceration, (2) all ulcers on the greater curvature of the stomach (recognizing the fact that such lesions occasionally may be benign), (3) ulcers persisting despite adequate medical treatment, (4) recurrent bleeding, and (5) gastric ulcer complicated by delayed gastric emptying.

Jejunal Ulcer

Jejunal ulcer presents a difficult therapeutic problem because of the tendency of the lesion to penetrate, bleed, and perforate. Some patients respond to careful medical management in the hospital, including roentgen irradiation of the stomach, which is applicable to persons over 45 years of age. As a rule, however, surgery (transabdominal vagotomy, with or without further gastric resection, depending upon the circumstances) is preferred.

Gastrojejunocolic Fistula

Gastrojejunocolic fistula requires initially the restoration of nutrition with a diet high in proteins, calories, and supplements and the correction of electrolyte and fluid imbalance. The operative procedure consists of resection of the fistula, reconstruction by means of gastroenterostomy, and a more adequate gastric resection or vagotomy.

Complications

Intractable or Refractory Peptic Ulcer.—The term "intractable" ulcer implies a lesion not responding to the usual treatment and, therefore, one requiring operation. Intractability is interpreted differently, not necessarily critically, by different observers; "usual" therapy is not synonymous with "effective" treatment. The program prescribed in an individual case may be inadequate, or the patient may not adhere to the regimen because of a poor patient-physician relationship. Many cases classified as intractable undoubtedly belong in this category of apparent intractability. The ulcers actually are not refractory, for, under proper circumstances, they heal completely. In the truly intractable peptic ulcer, treatment ordinarily effective fails to promote healing or to prevent complications. The underlying cause may be serious emotional difficulties, uncontrollable gastric hypersecretion, decreased tissue resistance, or irreversible complications, such as obstruction or penetration of the ulcer with adherence to the pancreas. In evaluating an intractable peptic ulcer, careful study of all possible contributory factors is necessary.

Gastric Retention.—Gastric retention in patients with peptic ulcer usually is attributable to inflammation and edema adjacent to an active ulcer, temporarily narrowing the channel through the pylorus and duodenum. This complication often responds within 7 to 10 days to a medical regimen of no food or drink taken by mouth, continuous gastric aspiration, and the parenteral administration of electrolytes and fluids. The continuous removal of acid permits the ulcer to heal; the edema and inflammation subside, and the channel through the pylorus and duodenum once more is patent, as indicated by decreasing volumes of gastric aspirate and by the maintenance of or gain in body weight. The use of antispasmodic and anticholinergic compounds under these circumstances is undesirable, for the subsequent decrease in gastric motility may intensify the retention. In perhaps 15% of cases with retention, the obstruction is caused by scarring and cicatricial narrowing of the pylorus and duodenum. This type of obstruction requires surgical treatment, preferably gastroenterostomy and vagotomy, or partial gastric resection.

Acute Perforation.—Acute perforation is the most urgent indication for operation. Surgical treatment usually is limited to simple closure of the perforation, although in patients with a long history of ulcer recurrence, who are in good condition, partial gastric resection also may be performed. Excellent therapeutic results apparently may be obtained with a program including prompt, continuous, and effective gastric aspiration, administration of adequate amounts of electrolytes, dextrose and water, sulfonamides, and antibiotics, and supportive care. The nonoperative approach is based upon the observation that early perforations will seal rapidly if the stomach is emptied and kept so by aspiration. It seems to be indicated especially in patients hospitalized approximately 24 hours or longer after the perforation and in individuals with difficult medical problems who are serious operative risks.

Massive Hemorrhage.—Hemorrhage complicates the course of peptic ulcer in perhaps 20 or 25% of cases; some patients appear to have a definite tendency to recurrent bleeding. Therapy usually is medical. It includes rest in bed and sedatives, such as 120 mg. of phenobarbital sodium given intramuscularly every four to six hours for restlessness. The blood type of the patient is determined and blood made available immediately. The hemoglobin level and the erythrocyte count or the hematocrit is measured daily or as often as the clinical course indicates. If the patient is vomiting, food and drink are withheld until the vomiting subsides. Otherwise, milk and cream and antacids are administered hourly during the day, as in the standard program; the alkali is continued every two hours during the night. Transfusions of whole blood, 500 to 600 cc., are administered when the systolic blood pressure falls to 100 mm. Hg, when the pulse rate exceeds 100, when the erythrocyte count decreases to below 3 million per cubic millimeter, or when there is continued severe hemorrhage, regardless of any criteria. In utilizing the pulse rate as an index of continued bleeding, measurements probably should be made with the patient in the sitting or the standing position, since the pulse rate with the patient horizontal may not increase significantly, despite considerable loss of blood. A preparation of 5% dextrose in isotonic sodium chloride solution may be administered subcutaneously in limited quantities. Additional measures may include the administration of antisecretory drugs and, infrequently, the intragastric drip. Gastric lavage with ice water or with hemostatic medication is not necessary. The antacid program is maintained until the erythrocyte count and the hematocrit are stabilized and the feces are negative for occult blood. The subsequent treatment is that outlined for uncomplicated peptic ulcer.

Surgery is indicated in bleeding peptic ulcer under the following conditions: (1) severe, persistent hemorrhage during medical treatment, (2) recurrent bleeding, (3) stomal ulcer with hemorrhage, (4) hemorrhage and perforation, and (5) hemorrhage and pyloric obstruction. The decision for operation usually is made during the first 48 or 72 hours, because complications and mortality rate rise with persistent uncontrolled hemorrhage. Occasionally, the decision may be deferred for several additional days, provided that the patient's general condition remains good and an adequate blood volume is maintained.

Bleeding is more severe and more likely to persist in patients 50 years of age and older than in younger persons; therefore, operation is indicated in older patients not responding promptly to medical treatment. A useful index is provided when two or more transfusions per day, or during a portion of a day, are insufficient to replace the blood lost, and the bleeding continues (the so-called test of transfusion). Since the hazards of surgery also are increased in this age range, the surgeon also must accept a higher calculated risk. The operation of choice in massive hemorrhage from peptic ulcer is partial gastric resection, excision of the lesion if possible, and ligation of the bleeding vessel. Gastroenterostomy alone or with vagotomy usually is not satisfactory for this purpose. "Blind" gastric resection may be performed to control bleeding from tiny gastric erosions, so small as to escape recognition clinically or at operation. Excellent results have been reported; however, opinions vary as to the routine applicability of the procedure. Surgery does not protect completely against recurrent hemorrhage, although the possibility is greatly reduced.

Prevention of Recurrences

The immediate results of effective therapy in peptic ulcer are good, with prompt relief of pain and complete healing. The long-term results are less encouraging, perhaps because of failure to maintain adequate and continuous neutralization of the acid gastric content. Recurrences of peptic ulcer are frequent with almost any type of therapy, medical or surgical, which does not abolish acid secretion permanently. The precipitating factors recognized and emphasized most often are physical fatigue, emotional stress, dietary indiscretions, irritating drugs, and intercurrent illness. There are no specific measures completely protecting against recurrences, except the production of anacidity. However, the tendency to recurrences may be lessened and their severity decreased by a comprehensive program, including (1) thorough treatment of the initial lesion and careful supervision of the patient subsequently, (2) education of the patient as to the nature of the disease and the principles and objectives of treatment, (3) continued use of a bland diet, (4) a practical but efficient program of acid control, (5) avoidance of alcohol, tobacco, and irritating drugs, (6) sufficient rest and sleep, (7) control of emotional problems, if possible, and (8) proper care of respiratory infections and other intercurrent illness.

Conclusion

Despite the limitations of medical management, current methods of treatment, when applied properly, are effective in the vast majority of patients with uncomplicated peptic ulcer. Treatment should not be confined to a single therapeutic measure.

The emphasis should be on total management, including use of antacids, anticholinergic drugs, and sedatives, avoidance of gastrointestinal irritants, and skillful attention to emotional problems. Inadequate results usually are attributable to inadequate therapy. The fact that treatment is more or less nonspecific does not justify its casual and indifferent application. The continued study of hormonal factors, of drugs acting upon enzyme systems implicated in the process of gastric secretion, and of secretory inhibitors in the gastric content eventually may yield a medical technique for producing sustained gastric anacidity. The cure of peptic ulcer obviously will depend upon further knowledge of its pathogenesis, especially the nature of tissue resistance and the mechanism of secretion of hydrochloric acid.

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MEDICINE AT WORK

GUARDIANS OF THE M.D. OATH

THOUSANDS OF GRIEVANCE COMMITTEE MEMBERS ARE THE MUSCLE OF MEDICINE'S HIDDEN STRENGTH

Milton Golin

> "*. . . I will keep pure and holy both my life and my art. . .*"
> *—Oath of Hippocrates*
>
> *"Am I my brother's keeper?"*
> *—Genesis IV, 9*

A California physician, suing to collect a bill which his colleagues had formally condemned as way out of line, loses out when they unhesitatingly testify for the patient. Two lawsuits are avoided in Dumas, Ark., where a medical society panel of physicians and laymen amicably resolve separate doctor-patient disagreements. A Colorado doctor adjusts an excessive fee rather than face "trial" before his medical peers.

These events illustrate the bridging of two millenniums—from the time of the ancient phrases quoted above to a revolutionary trend which began growing only in the past decade. This trend now has the vast majority of American physicians embracing the thesis that by being their professional brother's keeper they are keeping their art pure and holy.

It was not always so. Early medical organizations were patterned after guilds or fraternal lodges, which essentially set themselves apart from society at large. Although many individual physicians did not welcome such isolation, it did bolster a needed comradeship at times when a pitiful sparseness of medical knowledge might make doctors the favorite target of public abuse. A large body of physicians philosophically regarded lay criticism as an occupational hazard of the medical profession, feeling that an endeavor so intimately concerned with the human body is bound to evoke intimate comment from that body: He is "a good doctor" or "a bad doctor"; he charged "a reasonable fee" or he charged "an exorbitant fee"; he "should not have operated" or "it's certainly a good thing he did operate."

Fig. 1.—Orange County (Fla.) Medical Society grievance committee in session last month. Woman patient tells her story to (*left to right*) Drs. Norman F. Coulter, Charles J. Collins, Lawrence H. Kingsbury, and William S. Mitchell (chairman).

When the Massachusetts Medical Society established its Committee on Ethics and Discipline—the profession's first grievance committee—in 1871, there were some murmurings of discontent among physicians: "This only makes things worse and it isn't any use to stir up trouble." "The public brings in ill-founded and nuisance complaints." "It isn't anybody else's business what a doctor charges." "You only aggravate the involved doctor and the patient becomes disquieted at more doctors."

Little by little over the years—slowly, because the committee was not publicized—patients' complaints against some Massachusetts physicians were bringing a new kind of dignity to the profession. At last here was a device for protecting the mass of honest doctors from the few who were smirching medicine's name. Even more important was the opening of communications for physicians and patients to explain some of their mutual problems—why a certain fee is charged and what happens when a specific therapeutic measure is taken; the impossibility of guaranteeing cure and the consequences of no treatment at all; difficulties in diagnosis and difficulties in meeting some medical costs.

This newly opened line between doctor and patient was beginning to reveal to the public that physicians do not cover up each other's mistakes and that medicine is not a closely knit protective fraternity, complete with secret passwords.

Despite a lack of publicity, word of the Massachusetts society's successes in bettering public relations and uplifting medical ethics reached doctors in other communities. But still it seemed too large a step for most medical societies to take—imagine, setting up a complaint desk for patients!

Cleanup in California

A still-unenlightened public, meanwhile, was beginning to hear some distorted stories and outright slanders against doctors at a time when medicine was entering an era of scientific advancement that should have insured its good repute as never before. Some dissatisfied patients were taking out their anger on all doctors, and not just on those who may have disappointed them. Not all the stories were distortions. In northern California, for example, one physician probably saved the sight of a young girl's eye by removing a splinter—then demanded immediate payment of a $1,200 fee, even after her parents were able to prove they could not afford to pay that much. Officials of the Alameda-Contra Costa County Medical Association pleaded with the eye doctor, and ended up by denouncing him.

Right then and there, these California medical men grasped the truth in the FBI slogan: "One man can't build a big organization but one man can tear it down." They began surveying medical practice in their community and found more evidence that called for action—several other physicians charging excessive fees, some shielding of incompetents, absence of an emergency medical service plan. Finally, when one local doctor sued a patient to collect a $70 fee for minor services valued at certainly no more than $10, the society marshalled four specialists who testified that the bill was too high. The suing doctor lost his case, and physicians from scattered parts of the nation sent in expressions of warm approval of the society's role.

Among changes brought about by Alameda-area doctors were the establishment of a 'round-the-clock emergency call system and the adoption of a voluntary medical care policy best described by this ad they placed in local newspapers:

> WANTED: Information concerning anyone in Alameda County who believes he cannot get needed medical care because he hasn't the means to pay his doctor. Call the Alameda County Medical Association, through which the ethical private physicians in this county guarantee medical care for everyone.

The association's executive secretary publicly spelled it out in detail: "We accept the broad responsibilities for the delivery of needed medical care to everyone, regardless of the time, the day, the patient's inability to pay, or any other consideration. The association seeks to protect patients from—or to gain redress or compensation for—injury, neglect, incompetence, excessive fees, or any other malpractice or unethical act of its members. It attempts to maintain a suitable climate for constructive competition under a free enterprise system which constantly improves the quality and holds down the cost of medical care."

In 1947, just about the time this new program was getting under way in California, the Colorado State Medical Society took a forthright step which also won high praise from the profession at large, and at the same time made headlines which evoked applause from the public throughout the United States. The Colorado society announced publicly the formation of a sort of "grand jury" of physicians not only to hear complaints of patients but to initiate investigations of its own. This grievance committee, made up of 12 doctors elected by their colleagues in the society's House of Delegates, exerts its right to file charges with a local medical society in Colorado, the state society, the state board of medical examiners, or any prosecuting attorney in Colorado.

It was the Colorado society's action, more than any other, which sparked the broad-scale establishment of medical grievance panels in communities all across the nation. As medical societies began looking for guidance in setting up these panels, the American Medical Association's policy-making House of Delegates in 1954 authorized Dr. J. P. Culpepper Jr. of Hattiesburg, Miss., to lead a special two-year study for developing guides for grievance committees.

Now 1,100 Committees

The number of these committees is growing rapidly. Today every state and territorial medical association has a group of doctors (variously called

—according to local preference—"grievance" boards, "mediation" committees, and a dozen other titles) to handle complaints from patients. Estimates based on a survey made several months ago by the A. M. A. Council on Medical Service indicate that there are some 1,100 grievance committees among the approximately 2,000 county medical societies in the United States—and the number is still growing. More than 200 were formed in the last four years alone.

Serving on these committees are between 5,000 and 10,000 physicians (the number on each panel has been fluctuating as the societies attempt to refine their operations) who have become prime guardians of the Hippocratic Oath. It is these doctors who are drawing the lines of medicine's new look. And it is their fearless willingness to judge complaints routinely in the twin light of public interest and professional service which is setting the standard for an expanding age of free-enterprise medicine.

As one example of this routine fearlessness, when grievance committee members in a large Eastern city recently upheld a series of complaints, they published these blunt comments about their now-wiser colleagues:

"Engaged obstetrician should not have charged full fee when substitute did service."

"Doctor gave improper handling by calling police on erroneous impression patient was drunk, when actually suffered neurological condition."

"Fee for prenatal visits considered excessive."

"Doctor charged over Blue Shield allowance based on family income limit."

"Physician freely admitted he gave wrong laboratory report."

"Patient (in poor family economic situation) probably not adequately told of cost of medical care."

Recognizing the high-principled courage behind statements such as those, Dr. Louis H. Bauer, former A. M. A. President, has said: "Unethical practices can be eliminated by grievance or mediation committees made up of members with steel in their backbones." He might have added that members also need the tact of a diplomat in resolving certain disputes informally—so that these may bypass the formal hearing stage—and in keeping a patient happy while proving to him that his particular complaint may not be justified. Here are a few instances of unjustified complaint:

—One patient in a West Coast city protested bitterly to a grievance committee that he was charged $40 for "just one office visit." Investigation disclosed that, at his own request, the visit entailed a thorough examination including fluoroscope study, electrocardiogram, and the benefits of extensive laboratory work. When he understood what the fee covered, he withdrew the complaint with apologies.

—A Nashville woman complained to the Davidson County Medical Society grievance committee: "I was in my doctor's office for only an hour. He made two house calls and sent me a bill for $100." It was brought out, however, that the office visit involved a series of x-rays, various tests, and the fitting (with subsequent checkups for fit in her home) of a special corset for proper support of the woman's injured back. When the reasonableness of the charge was pointed out, the bill was paid immediately.

—A Chicago woman told a grievance committee that her doctor was "arrogant" because he took her full pack of cigarettes when she offered him only one. It turned out, to the woman's later satisfaction, that he had pocketed the pack absent-mindedly.

These incidents point up the fact that, by far, the large majority of complaints against doctors are due not to incompetence or greed but to misunderstandings—misunderstandings which could have been dispelled quickly if there had been an opportunity to determine the causes in frank discussion. "Misunderstanding" was the culprit in Philadelphia, where a stubborn businessman refused to pay for a stomach operation because, he said, doctors never told him "what had been taken out and what left in." A young New Yorker, grieving over his wife's death from uterine cancer, might not have blamed her physician had the husband understood the hazards of her condition.

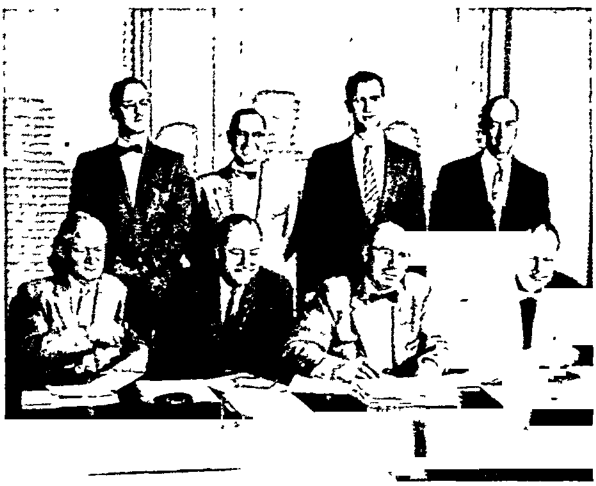

Fig. 2.—First photo ever published of grievance committee members of the Colorado State Medical Society, which sparked the growth of such mediation panels throughout the U. S. in 1947. Front row (*left to right*): Drs. James S. Orr, Freeman H. Longwell, Kenneth H. Beebe (chairman), and William Baker. Standing are Drs. John Simon Jr., Paul Tramp, Joel R. Husted, and Robert H. Smith. Members not shown are Drs. George D. Balderston, Gordon H. Vandiver, Walter M. Boyd, and Ligon Price. Committee last met on March 15.

Last summer a doctor-patient misunderstanding erupted in newspaper headlines when a Manorville, N. Y., specialist submitted a $1,500 bill for 'round-the-clock services which helped save a boy who was trapped in a well. There was controversy over the parents' failure to compensate the doctor while they disbursed contributed funds to salaried rescue workers, and as to their ability to pay a fee ordinarily considered quite reasonable for the professional skill and long hours involved. The physician's medical society grievance committee met with him, and in 24 hours they announced that the entire bill had been cancelled. Later, Dr. Edwin S. Hamilton, Chairman of the A. M. A. Board of Trustees, announced: "Rarely has the value of such a local mediation committee been so clearly demonstrated."

Integral Part of Medicine

All over America, medical organizations are telling doctors and patients alike that such a value has now—after 10 years—made the grievance committee concept an integral part of the profession:

—"Most doctors are wonderful men who want to do the right thing for their patients," announced Rollen Waterson while executive secretary of the Alameda-Contra Costa Medical Association. "Now they've finally realized that 'doing the right thing' means they must also protect patients against the few doctors who are incompetent or dishonest, and who are smirching the reputation of the entire medical profession."

—A report in the journal, *New York Medicine,* states: "Our grievance committee feels it has served a useful function in public relations, not only in helping iron out disputes arising between patients and physicians but also in a prophylactic sense—by helping to prevent such complaints from arising. We now find doctors, aware of our existence, calling us up for guidance."

Fees

So many complaints have been caused by a misunderstanding of the basis for a doctor's fee that grievance committees spend a good deal of time emphasizing the importance of discussing costs before, and itemizing bills after, medical service. "Some doctors seem to be just too high-hat to discuss these things [diagnostic and therapeutic procedures and costs]," said the first chairman of the Colorado State Medical Society's grievance committee. "If they would take just a little more time with each patient 75% of the complaints would never arise."

The Philadelphia County Medical Society reports that out of 28 cases handled by its professional relations committee during the first part of last year, "in 14 the difficulty need not have arisen if the medical man had been sure that the patient or his family knew the approximate fee that would be involved."

The A. M. A. has taken a double-barreled approach on fees—on the one hand conducting an intensive campaign for prior discussion between patient and physician, and on the other hand calling upon constituent and component medical societies to crack down on the few doctors who have been gouging. Today more than 20,000 doctors' offices display an A. M. A.–distributed plaque which carries this message:

> TO MY PATIENTS:
> I invite you to discuss frankly with me any questions regarding my services or my fees. The best medical service is based on a friendly mutual understanding between doctor and patient.

That same statement is in a leaflet which has been distributed to nearly 4 million patients by their physicians. The A. M. A. Board of Trustees, meanwhile, states that "it looks with disfavor on the few members of the association who charge excessive fees. It urges state and county societies to discipline those members who, after a fair hearing and decision that the fees charged have been excessive, refuse to reduce their fees to a level that is reasonable for the services rendered."

In many communities, grievance panels have taken up the challenge; in a few they have hesitated. For example, one southern dermatologist lost his court suit to collect a bill for $200 after his own medical society provided the patient with a lawyer and four physicians to argue that the fee was excessive, but in a midwestern community there still is no grievance committee action many months after a patient complained that his doctor billed him $1,500 for nothing more than three weeks of daily hospital visits with diet instructions. In one New York suburb, the county society's grievance committee dressed down a physician for having the nerve to submit a $200 bill to a woman who nearly died of peritonitis because he failed after three days to make an ordinarily simple diagnosis of appendicitis, but in another metropolitan area a grievance committee still has not satisfied a number of complaints that its own medical society routinely demands that every caller for emergency medical care have a specified minimum amount of cash on hand to pay the doctor (a check or voucher will not do).

Lay Membership

Despite ample evidence that grievance committees are operated in the public interest (one woman on the West Coast says, "In our community we all know the doctors are working to protect us, not other doctors' careers") some skeptics have asked why laymen are not allowed to serve on grievance committees "so there will be no whitewash of those few bad doctors." (The Reverend Paul Reagor, after sitting in regularly as a "public observer" for the medical society of Alameda, said, "If there has been any covering up for guilty physicians, I certainly have never seen it.")

As a matter of fact, at least a dozen grievance committees do have lay members—and at the invitation of the physicians themselves. In one case (among many elsewhere in the nation) a minister, a business school dean, and a local merchant serving with doctors on the Douglas County (Kan.) Medical Society grievance committee resolutely decided that a patient's complaint definitely was not justified. A clergyman, an auto dealer, and a plantation owner serving with physicians on the Desha County (Ark.) Medical Society grievance committee settled two cases "which saved us from lawsuits," according to Dr. G. U. Robinson, the society's secretary.

Jack Drury, lay executive secretary of the Davidson County Medical Association in Nashville, says: "We would not attempt to operate our grievance committee without at least one lay member. That's the way the society and the people like it." Three laymen served with physicians as grievance committee members for the Cumberland County (Pa.) Medical Society. "In one session involving fees," recalls the former secretary-treasurer, Dr. Richard R. Spahr, "the finding was against the physician for overcharging—he had that reputation for some years." The Sullivan-Johnson Counties (Tenn.) Medical Society has two separate grievance committees, including lawyers and businessmen, to serve adjacent communities. "Two years ago we avoided a lawsuit by settling a patient's complaint against two doctors and a private hospital," says Dr. Frank W. Sutterlin, who was serving then as secretary.

"Inclusion of laymen in grievance committees is still in the experimental stage," reports the A. M. A. Council on Medical Service. "But they may serve to strengthen community trust in the impartial attitude of the committee by assuring the representation of the patient's viewpoint, and serving to emphasize the profession's interest in public policy."

Although nonphysician members offer certain values to some grievance committees, a number of experienced laymen and doctors alike see some over-riding disadvantages in such an arrangement.

SOME COMMENT ON GRIEVANCE COMMITTEES . . .

"If we individual physicians do not keep medicine's house in order, outside organizations—like hospitals or government—will do it for us. That is why medical grievance committees are protecting the honest and capable physician as much as they are the patient."

—Dr. David B. Allman, president of the American Medical Association.

"While it is never pleasant to find a colleague guilty and impose punishment, this is a responsibility falling on some of us. . . . If local societies fail to curtail unethical practices, ethics lose their effectiveness."

—A. M. A. Judicial Council.

"Unethical practices can be eliminated by grievance or mediation committees made up of members with steel in their backbones."

—Dr. Louis H. Bauer, when retiring as A. M. A. President.

"The whole profession should not be tarred with the same stick which should be applied to the few."

—Dr. Edward J. McCormick on becoming A. M. A. President in 1953.

"The ethics of medicine were written and are enforced to protect the interests of the public. When any professional act by your doctor is opposed to the public interest, he is guilty of unethical conduct."

—The Texas State Medical Association in a publicly distributed leaflet.

"You cannot afford to protect the doctor who is not faithful to his vows and to the highest ideals of the profession."

—Louis B. Seltzer, Cleveland newspaper editor, addressing an A. M. A. convention.

"Most doctors are wonderful men who want to do the right thing for their patients. Now they've finally realized that 'doing the right thing' means they must also protect patients against the few doctors who are incompetent or dishonest, and who are smirching the reputation of the entire medical profession."

—Rollen Waterson, while executive secretary of the Alameda-Contra Costa (Calif.) Medical Association.

"The aim of a grievance committee—whether some committee members know it or not—is simple and sufficient: To clean medicine's house and to better public relations."

—Dr. H. Sheridan Baketel in the Bulletin *of the Pottawatomie County (Okla.) Medical Society.*

"Let us not forget that we are enfranchised by the public and that only as long as we serve it will our franchise continue."

—Dr. Francis T. Hodges, while president of the California Academy of General Practice.

"It's the bad apple in the barrel that causes complaint. . . . The medical profession cannot afford to shelter the not-so-ethical man. . . . Disciplinary action, when justified, strengthens the position of the profession in the eyes of the people."

—PR Doctor, *Published by the A. M. A.*

"The mediation committee can do more for the physician than any other single committee within the medical society. Mediation committees that function ethically and effectively will be a great factor in avoiding the political control of medicine and, in addition, they can and do protect the economic and professional status and freedom of the physicians by acting at all times in the best interests of the public."

—Dr. Robert E. Fitzgerald in Minnesota Medicine.

"If the doctors can use the [grievance] committee to eliminate the complaints arising from their fees, either by explaining the reasons for them satisfactorily or by forcing reductions where some members get out of line, more will be done to still the clamor for a national compulsory health insurance than in any other way."

—Dr. George W. Harrison, while president of the Oklahoma State Medical Association.

Officers of one East Coast medical society revoked the committee memberships of its attorney and its lay executive secretary on the ground that their presence during hearings on confidential matters might violate privileged communications between doctors and patients. An adjacent medical society gave the same reason in turning down its executive secretary's suggestion that the complaining patient be allowed to bring along the clergyman of his faith to the grievance committee session.

Harvey T. Sethman, who is lay executive secretary of the trail-blazing Colorado State Medical Society, seconds that reasoning and offers what he believes to be an equally potent argument against lay membership: "Such a procedure weakens the major point of the whole system of self-discipline because it takes the 'self' out of self-discipline."

What a Committee Is and Does

While almost every grievance committee is made up entirely of physicians, ranging in number from one to 27, its manner of organization and make-up varies from society to society. In some communities, members are elected by their colleagues, and in others they are appointed by the society president. The Oklahoma, Florida, and Virginia state medical association grievance committees are comprised of past-presidents—on the "elder statesman" theory that these men possess particularly experienced and dispassionate judgments. Other societies pointedly reject such a plan, contending that past-presidents are more likely to face acquaintances among doctors accused by patients and would tend toward more bias than would other physicians.

Fig. 3.—Nashville (Tenn.) Academy of Medicine's grievance committee of four physicians and one layman hears a complaint brought by a patient (back to camera). *Left to right* are Mr. Lee Sanders, Drs. Louis Rosenfeld (chairman), Robert Finks, Eugene Johnson, and Harrison Shull. Mr. Sanders has been a member of the committee since 1952.

Many state grievance committees serve as "appeal boards" when a county-level committee cannot bring about agreement. They may also serve as basic hearing panels for areas too thinly populated to have committees of their own. Wherever possible, hearings at the community level are encouraged, to emphasize the profession's neighborly concern for patients and the efficacy of local decisions.

In virtually all cases, a grievance committee does not mete out punishment when it finds a complaint justified. "You cannot be prosecutor, judge, and jury all in one body," says a spokesman of the Colorado society. "There have been court cases where county society disciplinary actions have been set aside for that very reason." A special committee of the A. M. A. House of Delegates reported: "Discipline is not a proper function of a grievance committee under any circumstance. Where a grievance committee finds that disciplinary measures are indicated, it should so recommend to the appropriate judicial body of the association."

Punishment may take the form of a reprimand, limited suspension of membership, or even expulsion. In addition, some grievance committees have brought in medical specialists to provide free remedial care for patients who have made justified complaints of harmful treatment.

Doctors have learned that one way to head off a complaint is to anticipate it—nip it at the source before the patient gets hurt. When the A. M. A.'s special committee surveyed grievance panel operations in 1955 (Chairman Culpepper believes the time is ripe for a re-survey) it found a number of medical society leaders recommending that mediation boards also have the power to initiate investigations. Many complaints could thus be avoided.

In one state, the survey team reported: "All seemed aware of a 'bad situation' in the staff of a certain town's hospital, with no tissue committee or other check on the surgery done there, with consequent rumors among both the profession and the laity that are damaging to the profession generally —but nobody has 'filed a complaint' and nobody will."

In another state recently there was talk but no action (one complaint was pending, at last report) by county society grievance committee members when officials of a nearby hospital removed a local surgeon's privilege to practice there—then went to court and formally accused him of 25 incidents of unprofessional practice, including needless surgery, in which six patients died. (The physician flatly denies the charges.) The A. M. A. study group recommends that grievance committees be empowered to launch their own fact-finding projects.

Yet, it is in the role of inquirer that committees often face a ticklish problem: How to convince a doctor that his invitation or summons to a hearing in no way places him "on trial." His testimony can be of tremendous help to the entire profession, even when it does not relate to any patient's complaint.

Making It Known

Mere existence of a grievance committee is valueless unless it is made known to both the profession and the community. "This service cannot succeed unless the public knows of its existence and understands how to use it," according to the A. M. A. Council on Medical Service. "It is highly inconsistent for a medical society to set up a mediation committee and then keep it a secret from the public. Some physicians fear that a mediation committee will evoke complaints from a greater number of cranks and psychopaths. This has not proved to be the case where mediation committees function and are well publicized."

Nevertheless, some medical societies continue to hide the light of one of medicine's brightest achievements—the grievance committee—under a bushel. Theirs is a committee in name only; it serves no real purpose. One medical society official in Illinois makes this naïve comment: "No, we don't publicize the fact that we have a grievance committee. We've met only four times in the past four years because our troubles are nonexistent." A doctor in Florida says, "We don't announce our committee but I'm sure everybody around here knows about it." A New York physician says he is being frank when he expresses fear that "publicity would only invite complaints."

Yet an A. M. A. survey of 18 state medical associations, which make a policy of frequently announcing operation of their grievance committees, revealed that the number of complaints had not increased (in some, had decreased) and that not one had suffered adverse publicity of its committee in the lay press. On the positive side, one of these associations reported: "The key to the prevention of grievances is publicity." An executive of another state medical society commented, "By repeatedly making known that a grievance committee is functioning, we have killed off much of the back fence gossip, coffee cup slander, and scandalous whispers which have harmed the many honest doctors in this state." A third said: "This committee has definitely improved standards of medicine in our community. Its existence, made known in newspaper ads and broadcast announcements, seems to have been a deterrent to wrongs we know had been done by a small group of physicians, and has brought about a better public attitude toward the profession."

Says the A. M. A.'s immediate past-president, Dr. Dwight H. Murray: "I cannot understand why anyone should be fearful of attracting complaints to a channel where they could be disposed of intelligently. A person with a real or imaginary grievance against his physician will circulate his complaint among his neighbors and throughout the community unless he knows there is a place where he can take his problem and get a hearing."

Equally important is the ethics value of grievance committee publicity. In one state not long ago an internist referred a patient to a surgeon for a stomach operation, and later submitted an $800 bill for merely changing dressings and making diet suggestions. Invited before the local grievance committee, this physician was persuaded to reduce his bill to a more appropriate $200. However, a few other doctors in the same community also had been charging excessive fees but they were unable to benefit from the internist's experience—simply because they were not informed of the committee's action. (For reasons of privacy, of course, action reports never include names of individuals.) As a result the grievance panel has had to handle additional cases from patients complaining of fees.

"As things stand now," writes Dr. H. Sheridan Baketel in an editorial in the *Bulletin* of the Pottawatomie County (Okla.) Medical Society, "when some grievance committees discipline a doctor only a handful of people know what for. So the offense, whatever it was, may well be repeated by others. Effective publicity means letting the public and the profession in general know what kind of grievances patients are giving vent to and what medicine is doing about them. We don't want to go on adjudicating a lot of grievances indefinitely. We want to prevent them from occurring. So far there has been altogether too much talk about how many medical societies have grievance committees and not enough about how much those committees are accomplishing."

Certainly this is not true in Colorado, where periodic announcements of state medical society grievance committee decisions serve as a reminder for present members and as information to new members that such a panel does exist—with a purpose and with obligations placed on members. "The net result of all this publicity has been a tremendously increased public confidence in the medical profession in our state," says Executive Secretary Sethman. "Time and again prominent laymen have openly expressed their gratitude for the existence of this mechanism."

Challenge and Opportunity

There is a great difference between a few laymen praising a grievance committee and a mass of Americans accepting the effectiveness of such panels as a matter of course. Herein lies the broad challenge-opportunity which is being taken with increasing vigor by the more than 5,000 physicians who are grievance committee members. In their judiciousness lies a great and good "hidden" strength of freely organized medicine. What is this strength? It is the spontaneous will to do good for good's sake, and not for the sake of alien "authority."

A survey report which led to the pioneering medical grievance panel in Colorado points out: "Unless it wishes to surrender additional areas to governmental jurisdiction, a profession must at all times formulate and enforce stricter standards than the law currently demands." Here is the way one leading physician, Dr. James M. Leffel, focused that same viewpoint on medicine, in the *Journal of the Indiana State Medical Association:* "We must put our house in order, for if we do not, someone will do it for us. If we stand for what is right, no one can destroy us. If we face and accept our obligations, we can live up to our magnificent heritage."

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IRON ABSORPTION

As POINTED out in this issue (page 1685), iron is a specific for iron-deficiency anemia. However, in order to be effective when given by mouth it must be absorbed. The four methods of studying iron absorption have been evaluated by Josephs[1] in an effort to determine which is most reliable. The older chemical method of determining iron balance measured the difference between the amount of iron ingested and the amount recovered in the feces. While this method is difficult, expensive, and subject to inadvertent errors, it has the advantage that long-continued and repeated periods of observation in a single subject may be made. This is not true of the easier balance studies with radioactive iron. A third method, by which the amount of absorption is inferred from the amount of iron utilized for hemoglobin formation, assumes that if iron is not utilized for this purpose it is not absorbed. This assumption is not always true. In the fourth method the curve of serum iron level after a test dose of iron has been given by mouth is determined. Although a high postabsorptive curve could only mean good absorption, a less high or flat curve does not necessarily mean poorer absorption unless one knows that there is no diversion of iron to the tissues. The rate of such diversion would have to be considered. Josephs believes that iron balance studies still constitute the standard by which the results of the other methods should be judged.

Bothwell and co-workers[2] used different methods of measuring iron absorption, including a double isotope procedure. They concluded that the method of choice depends on the problem to be solved. Although for most of their studies they preferred the double isotope method because of its simplicity and accuracy, this method cannot be used when there is complete failure of erythropoiesis.

Iron ingested in the ferrous form is largely absorbed in the duodenum. The larger the dose the more is absorbed in persons with iron deficiency, but in normal subjects only the daily requirement is absorbed regardless of the amount ingested. The taking of iron with a meal reduces iron absorption by about 50%. Pirzio-Biroli and co-workers[3] found that the absorption of iron from foods by normal and iron-deficient subjects was lower than when iron salts alone were given. Supplemental ascorbic acid decreased this difference. Absorption of iron from foods also varied inversely with the amount of iron stored in the body and directly with the amount of the subject's erythropoietic activity. Ascorbic acid in doses of 100 to 1,000 mg. and cobalt chloride in doses of 80 to 120 mg. daily for one or two weeks did not improve the results of iron therapy.[2]

Once iron is absorbed through the mucosal cells of the digestive tract, where its presence as ferritin is a form of temporary storage, it is passed on into the plasma at a rate that ordinarily does not increase the plasma iron level. It is taken up almost entirely by the marrow, replacing the small amount lost daily in the hemoglobin cycle (about 1 mg. a day). When absorbed in amounts exceeding this requirement or when erythropoietic activity is reduced, it is taken up by the liver for later transport to the marrow.

There is still much to be learned about iron absorption. The rate of absorption varies widely in normal subjects, the reason for which is not clear. As a result of his studies Josephs concluded that the increased rate of iron absorption in patients with iron-deficiency anemia is due to hemoglobin reduction and perhaps to increased erythropoietic activity rather than to a depletion of the body's iron storage.

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[1] Josephs, H. W.: Absorption of Iron as Problem in Human Physiology, Blood 13:1-54 (Jan.) 1958.

[2] Bothwell, T. H.; Pirzio-Biroli, G.; and Finch, C. A.: Iron Absorption, J. Lab. & Clin. Med. 51:24-36 (Jan.) 1958.

[3] Pirzio-Biroli, G.; Bothwell, T. H.; and Finch, C. A.: Iron Absorption, J. Lab & Clin. Med. 51:37-48 (Jan.) 1958.

GRIEVANCE COMMITTEES

Medical grievance committees are not new on the American scene. Since 1871, for example, the Committee on Ethics and Discipline of the Massachusetts Medical Society has been mediating the complaints of patients. What is new, though, is the expansion of these groups across the nation. Less than a dozen were functioning a decade ago when the Colorado State Medical Society made headlines and won praise from the profession at large for its pioneering "medical grand jury" which acted on its own initiative as well as on specific complaints.

Before long, leaders in the profession were realizing that here was something which could protect both its good name and the public interest. Late in 1954 the House of Delegates of the American Medical Association authorized a special study to develop guides for grievance committees.

From a few, the number of these committees has grown by leaps and bounds, until every state medical association can now boast a group of doctors responsible for the formal hearing of complaints from patients. And it has not taken long for hundreds of county medical societies to follow this lead. The trend is still developing. Over two-thirds of the 986 county societies surveyed last year by the A. M. A. Council on Medical Service had such committees. More than 200 of the panels were formed in the past four years alone. A projection of this survey to encompass the approximately 2,000 medical societies in the United States would indicate the existence of 1,100 grievance committees, comprising perhaps 5,000 to 10,000 physicians who serve 95% of our population.

What impact is this trend having on physician-patient relationships? On the general public's regard for doctors? On medical service itself? On the future of free medicine? "Medicine At Work" (page 1735) explores these questions in the light of grievance committee experiences in scattered parts of the United States. One conclusion appears certain: The grievance committee is here to stay as an integral part of our profession. In the years ahead, only technique may need refinement of the sort that is being trail-blazed today by some medical societies.

The ultimate aim of a grievance committee may well lie in the application of medicine's traditional three functions—preventive medicine, treatment, and rehabilitation—to the medical organization's judicial role. This extension of concept challenges the profession to continually strive for a reduction in the number of patients' complaints, to act forthrightly and fairly in resolving the relatively few which do arise, and to follow through with positive action in support of its findings.

WHERE THE MONEY GOES

Do you know how much money is being spent by the federal government on vocational rehabilitation, cancer, mental health, maternal and child welfare, or heart studies? If not, it might be interesting to turn to the Washington News in this issue, where you will find figures not in the thousands or even hundreds of thousands but in the millions. Various health and welfare activities in the Department of Health, Education, and Welfare alone are now big business activities. Vocational education is supported by current spending of more than 33 million dollars, vocational rehabilitation by 52 million, general aid to the states by 22 million, hospitals and medical care (not including the Hill-Burton program) by 44 million, maternal and child welfare by 41 million, and the National Institutes of Health by 189 million dollars. Without ready information on the number of taxpayers in this country, it is not possible to determine how many dollars each taxpayer pays in taxes each year for the support of HEW. But at least it is enough for all doctors to take a personal interest in how their money is spent in health activities, how effective these services are for their communities, and what influence they may have on their patients. If the services are worth while, doctors should know about them and understand them. If they are not, or something better can be substituted, this is a problem concerning which there should be no lack of understanding.

a salute to
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MEDICAL EDUCATION
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ORGANIZATION SECTION

EXERCISE AND FITNESS

A statement on the role of exercise in fitness by a joint committee of the American Medical Association and the American Association for Health, Physical Education, and Recreation

Fitness has many components, including intellectual and emotional, as well as physical, factors. These differ in relative importance from one period of life to another, depending upon varying individual roles and responsibilities. But in every part of life, each of these factors is important for effective living.

Fitness for living rests first of all upon a solid foundation of basic good health. Be it in the home, on the farm, in the factory, or in military service, fitness for living implies freedom from disease; enough strength, agility, endurance, and skill to meet the demands of daily living; reserves sufficient to withstand ordinary stresses without strain; and mental and emotional adjustment appropriate to the maturity of the individual. Physical fitness is but one element in total fitness. The top limits one can achieve in fitness are determined largely by inheritance. However, the extent to which the individual develops his potential for fitness is dependent upon his daily living practices including exercise habits.

Along with exercise, adequate nutrition, sufficient rest and relaxation, suitable work, the use of medical and dental services, and the avoidance of excesses are all important in maintaining fitness. This report, however, is intentionally limited to the place of exercise in the total program of fitness. Points of special emphasis are, first, that the living body is responsive to training, and, second, that the body operates under wide margins of safety and is remarkably resistant to strain.

Changes have taken place in modern living, including increased availability of easy modes of transportation and labor-saving machinery. As a result, more and more persons have tended toward a sedentary existence. From time to time in emergencies of various types, sudden and unusual physical demands may be laid upon individuals and groups. The possession of physical strength, agility, and endurance may enable the individual or group to survive, while the lack of fitness may spell catastrophe.

For purposes of this report, the desirability of fitness for the individual and for the nation is assumed. Here, the aim is to delineate the contributions of exercise to the development and maintenance of fitness. A medical examination to establish the fundamental soundness of the body is a prerequisite to any regimen of vigorous exercise.

Physiological Factors

The normal heart and circulatory system become more efficient in moving blood to active regions when repeatedly required to do so. Coincident to this development, improved pulmonary ventilation also results. The demand for increased circulation and pulmonary ventilation incident to protracted exercise is reflected primarily in an improved and more economical pumping action of the heart. Games and sports involving extended running, vigorous swimming and dancing, and other sorts of forceful effort serve this purpose. Prolonged inactivity, on the other hand, is marked by a decline in circulatory and pulmonary efficiency.

The ability of the body to function according to purposeful patterns is vested in the central nervous system. With practice and conditioning, many movement patterns become second nature and almost automatic. Adaptability of the nervous system is such as to permit proficiency in an almost unlimited variety of motor activities.

An individual's ultimate performance is limited by the physiological capacity of the body systems involved. Usually the individual reduces or discontinues his performance long before physiological limits are reached—when relatively slight fatigue sets in or in the presence of such mental factors as fear of overdoing. Such subjective factors as a feeling of breathlessness, general weakness, or muscular discomfort evoke reduction or cessation of activity. These may be conscious or subconscious inhibitions and are psychological rather than physiological in nature.

Athletes, who learn to carry their activity beyond the so-called psychological quitting time, sometimes experience a phenomenon known as "second wind," which represents a physiological adjustment

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Members of the Committee were as follows. From the A. M. A.: Frederick T. Jung, M.D., Harold P. Muller, M.D., and Allan J. Ryan, M.D. From the A. A. H. P. E. and R.: Laurence E. Morehouse, Ph.D., M. Gladys Scott, Ph.D., and Arthur H. Steinhaus, Ph.D. Fred V. Hein, Ph.D., was the editor. Consultants to the Committee were W. W. Bauer, M.D., F. A. Hellebrandt, M.D., Ernst Jokl, M.D., and Eleanor Metheny, Ph.D.

This report constitutes a revision of an earlier, similar statement published simultaneously in the *Journal of Health—Physical Education—Recreation* and in *Hygeia Magazine* (now *Today's Health*). The Committee and Consultants responsible for the earlier statement were Arthur H. Steinhaus, Ph.D., Chairman, W. W. Bauer, M.D., F. A. Hellebrandt, M.D., Leon Kranz, and Alice Miller; consultants, Henry A. Christian, M.D., John M. Coulter, M.D., Andrew C. Ivy, M.D., Ernst Jokl, M.D., and Peter J. Steincrohn, M.D.

to continuing exercise. While some athletes never recognize this physiological adjustment, they nevertheless become capable of more closely approaching their physiological limits in activity. This shift in limitations is generally regarded as one of the most important concomitants of training.

A distinction should be made, however, between healthful fatigue and harmful exhaustion. Exercise regularly carried to a point approaching physiological limits results in the development of increased endurance. Exercise carried to the stage of exhaustion may do harm, particularly in the unconditioned individual, and especially if this is frequently repeated with an insufficient time for recovery.

The voluntary muscles increase in size and grow stronger when gradually increasing loads are placed on them to the point where a major proportion of voluntary pulling power is involved. Activities of climbing, lifting, pulling, pushing, jumping, and speed running tend to increase muscular volume and strength.

In a sedentary existence, or where physical activity is not diversified, certain body muscles may not develop sufficiently. Various forms of prescribed activities are used in training programs to overcome this. These usually take the form of selected conditioning exercises, including calisthenics. Under intelligent direction, groups of muscles not much used in the limited activities of modern living or in specialized sport programs may be singled out for development.

Muscular strength increases throughout childhood and through adolescence, usually reaching a maximum in early adulthood (earlier in women than in men). In the 30's or 40's most individuals experience the onset of a gradual decline of strength. The heart and circulatory system also exhibit loss of functional capacity and resilience in recovery after exercise. The extent and rapidity of this decline is at least partly dependent on exercise habits in adult life. Persons who continue to train retain their capacities longer than otherwise. However, great individual differences are encountered dependent on constitutional disposition as well as exercise and other living habits. A few practical generalizations relating to the physiology of exercise seem warranted:

1. A child or youth requires more exercise than an adult because of growth needs. Also, the child's interests tend toward motor acts.

2. If the individual has been active throughout childhood and youth, maximum fitness is achieved earlier, and, in adulthood, decline of fitness is postponed.

3. Age, in itself, is not a contraindication to exercise. Precluding accidents, a healthy person will not do himself permanent organic injury by rational physical activity.

4. Among older persons (over 40) physical examinations and observation of individuals' reactions to exercise disclose large numbers for whom exercise needs to be especially selected.

5. The range of individual variation in capacity for exercise is considerable. Some persons, even at an early age, recover poorly from breathlessness, general fatigue, or feelings of exhaustion. In some, unfavorable emotional reactions are also noted. Attempts to modify these responses through planned exercise should proceed slowly under medical supervision. Such persons frequently cannot reach the levels of fitness achieved by those to whom exercise is an exhilarant and a stimulant.

Safeguards

When averages are considered, there are measurable differences between the sexes in heart capacity, muscular strength, and skeletal proportions. These differences set certain limitations for women in activities of strength, speed, and endurance. However, with the possible exception of heavy lifting or other activities involving greatly increased intra-abdominal pressure, women will profit from most forms of exercise.

In the planning of exercise programs for groups, activities selected for girls and women may well be less strenuous than those selected for men. The range of physical capacities in individuals of both sexes is great, however, with some women having more and some men having less than the average strength, speed, and endurance for their sex. In the case of the individual, therefore, sex is often less significant than constitutional differences, personal inclination, physical condition, and social custom in determining the appropriateness of specific activities.

Exercise has been shown to be beneficial in alleviating certain functional menstrual disorders. General exercise seems to be as beneficial as exercises specifically for abdominal muscles. Whether exercise is continued as usual should depend on the individual's menstrual experience and reaction to physical activity. Some women need not modify their exercise schedule at all, while others may find it desirable to reduce it. If there is reason for doubt, a physician should be consulted.

Certain exercises and activities are more appropriate to certain seasons of the year and certain climates. In general, however, the time of day for exercise may well be in accord with personal inclination, hours of leisure, and other determining circumstances. Evidence as to the effect of exercise on digestion indicates that physical exertion does not necessarily interfere with the digestive process, although strong emotion may do so even unaccompanied by exercise. Laborers and farmers customarily work hard immediately after meals. On the other hand, it has been found advisable for athletes to eat their pregame meal three or four hours prior to competition in activities involving emotional stress.

Exercise Suggestions

The following suggestions will be found useful in deriving the maximum of enjoyment and benefit from exercise:

1. All persons should be shown by medical examination to be organically sound before performing training routines leading to competitive or other strenuous exercise. The medical examination should be repeated periodically or whenever special indications appear.

2. A program of exercise started at an early age may be continued throughout life with certain adjustments in terms of the varying individual effects of the aging process.

3. An individual in good physical condition and training may appropriately participate in an activity that might be harmful to another person of the same age not in a comparable state of fitness.

4. Hard, fast, sustained, or highly competitive games and sports should not be played by persons beyond the age of 30 unless they have maintained or can attain by systematic training an appropriate state of fitness.

5. Persons who are out of training should not attempt to keep pace in any vigorous sport with persons who are properly conditioned and accustomed to regular participation in that sport. Being in condition for one sport does not always mean being in condition for another.

6. Persons should not compete in body-contact sports or endurance activities with others of disproportionate size or skill. Practice periods against such odds may occasionally be warranted as a learning device to gain experience or improve performance.

7. Persons long out of training, or "soft" (who have not practiced strenuous exercise regularly) will need an extended period of conditioning to facilitate gradual return to full activity.

8. The ability to recuperate after physical activity is a good guide to the desirable severity of exercise at any age. Recuperation should be reasonably prompt. If breathlessness and pounding of the heart are still noticeable 10 minutes after exercise, if marked weakness or fatigue persists after a two-hour rest period, if a broken night's sleep is attributable to exercise, or if there is a sense of definite and undue fatigue the day following, then the exercise has been too severe or too prolonged for that person in his present stage of training and physical strength.

9. Exercise, regardless of its nature or extent, cannot provide immunization against infectious illness, nor can it cure communicable disease. Medical determination of the amount and type of any exercise deemed desirable during convalescence is essential.

10. Sports involving body contact or traumatic hazards necessitate the provision of protective equipment. Such protection is especially important for the head. Other activities should be substituted for those in which adequate protection cannot be provided.

11. Boxing is a controversial activity because of the problem of brain injury from blows to the head. The controversy hinges on whether by proper equipment and right regulation participants can be given protection against brain injury comparable to that provided in other sports.

12. Careful preparation and maintenance of playing fields and other arenas of sports is essential to reduction of injuries and full enjoyment of the activity. Adequate facilities and proper equipment are necessary for the same reason.

Summary

Exercise is one of the important factors contributing to total fitness. The contributions of exercise to fitness include the development and maintenance of strength, speed, agility, endurance, and skill in persons who are physiologically sound. Active games, sports, swimming, rhythmic activities, prescribed exercises, and such vigorous hobbies as gardening and other work around the home all can make distinctive as well as worthwhile general contributions to fitness.

Individuals differ in their capacity to enjoy and benefit from participation in exercise, because of constitutional variations in body size, strength, and structure as well as differences in previous experience and present condition. Exercise should be graded according to age, individual reaction to activity, and the state of the person's fitness. After age 40, more frequent medical evaluation of the individual's capacity for exercise is imperative. Activities for girls and women should be selected with regard for their psychological as well as physiological characteristics. Those which involve a minimum of body contact and do not stress heavy lifting should be favored. Regularity of exercise should be stressed with activity continued, if it is well tolerated, during the menstrual period.

The training involved in preparation for athletic competition contributes as much to fitness as participation in the contests themselves. Systematic training for any activity contributes effectively to fitness. Time and care taken to condition the body for sports and athletics through appropriate activities will improve enjoyment, upgrade performance, and increase the ability to continue participation over a period of years.

Certain types of exercise are appropriate to certain conditions of weather and climate. Common sense suggests that a person should not set excessive performance goals under unfavorable conditions. The proper use of protective equipment is essential to safe and effective participation in certain sports. Careful maintenance and proper control of facilities for athletic and other types of participation will help to prevent accidents and reduce injuries. The rules of the game or specifications for play in an activity are made to protect participants and to enhance enjoyment. They should be properly interpreted, scrupulously observed, and vigorously enforced. The vigor with which an individual participates in an activity will have more to do with outcomes for fitness than the activities or events in which he elects to participate.

STATEMENT BY DR. BLASINGAME TO CHAIRMAN OF SUBCOMMITTEE NUMBER 2 OF THE COMMITTEE ON ARMED SERVICES

The American Medical Association has been following carefully the proposed changes in the pay scales for members of the military services, and is especially concerned with the proposed changes in the provision of the Medical and Dental Officer Career Incentive Act of 1956, Public Law 497. As your Committee is presently engaged in hearings on H. R. 9979, 85th Congress, a bill to change the method of computing base pay for members of the uniformed services, I am taking this opportunity to provide you with the action of our House of Delegates taken in December, 1957, on the subject, and also to re-affirm our position of support for the Career Incentive Act.

The medical officer career incentive bill had the wholehearted support of the American Medical Association. We believed then, as we do now, that it is a valuable method of preserving and improving the quality of military medical manpower. This legislation authorized step-up salary increases for military medical officers, with the raises so spaced as to appeal to seasoned officers, many of whom were leaving military careers for the private practice of medicine. Our great concern is that the progress made since 1956 will be lost if the relative benefits provided under the Career Incentive Act are eliminated in the proposed legislation. We have observed the results of the Career Incentive Act with satisfaction. The increase in special pay has had the effect of slowing down the resignation rate of regular medical officers of the armed forces, of increasing the procurement of new officers, and of providing stability to the respective medical corps. In time under this program the desired goal of a stable career corps, supplemented by younger reserve physicians serving for a shorter period of time, should be reached.

Some factors in the pending pay revisions offer cause for serious concern. Without commenting on the need for an over-all increased pay for the armed services, such as has been proposed under the Cordiner and Department of Defense plan, we believe that the proposed reduction in special pay by as much as $100 or $150 monthly in the groups of the most experienced physicians appears unwise. It certainly seems to be premature in that it would drastically change a law less than two years old. It is realized that, under the proposal, no reduction in pay is to result for any medical officer and that some additional raises will result. However, the reduction in special pay schedules, with a reduction in the amount for the more experienced medical officers, cannot help but have an adverse effect. Even at present rates, the special pay is largely an "earnings equalization pay" to compensate for the long and expensive medical education and the resultant delay in earnings for the physician. It provides little incentive to meet the competition of civilian professional opportunities, such as family stability, economic advantages for the successful physician in private practice, and professional satisfactions which are generally preferred by the majority of physicians to those of a military career.

The Career Incentive Act, passed only two years ago, appears to be doing the job it was intended to do. Figures provided to our Committee on Military Affairs of the Council on National Defense in October, 1957, show that resignations have declined to a significant degree, particularly among the medical officers who have had a number of years of service. Also, there is a rising interest in military medical careers, a trend that will strengthen the medical corps in the years ahead. However, since it is much too early to evaluate the long-term trend, we would recommend caution concerning any changes that might jeopardize the good which has already been accomplished. *It is sincerely urged that the Congress retain the special pay in the amount provided in the Medical Officer Career Incentive Act and that this special pay continue to be an addition to the pay provided other officers of appropriate rank and service.*

The following recommendation is an extract from the Reports on Actions of the House of Delegates. This recommendation was adopted by the House of Delegates on Dec. 5, 1957.—Ed.

Report of the Reference Committee on Medical Military Affairs

Mr. Speaker and members of the House of Delegates:

Your Reference Committee is in accord with the Cordiner study committee report which deals with the development of a program to attract and retain the combat leadership, scientific, professional, technical, and management skills required by our armed forces today and in the future, provided it does not impair the effectiveness of the present career incentive provisions now authorized under the Career Incentive Program.

This program has already proved of great benefit in atracting and retaining medical officers in the armed services.

Mr. Speaker, I move the adoption of this portion of the report.

NEW A. M. A. PUBLICATIONS

The ninth annual publication of "Reviews of Medical Motion Pictures" is now available on request from the film library of the A. M. A. This publication is prepared by the Council on Scientific Assembly, Motion Pictures and Medical Television, and contains reprints of all film reviews published in The Journal during 1957.

A. M. A. in Action.—An attractively illustrated 44-page booklet describes the activities and services of the A. M. A. Single copies free on request from the Public Relations Department.

COUNCIL ON NATIONAL DEFENSE

RESULTS OF SURVEY OF PHYSICIANS SEPARATED FROM ACTIVE MILITARY SERVICE

Since 1952, the Council on National Defense has conducted an opinion survey among physicians being released from active military service. The questionnaire utilized in the survey is primarily designed to obtain pertinent data based upon the physician's observations and opinions, while in the armed forces, concerning the utilization of physicians and the medical staffing conditions in the uniformed services.

The results of this continuing survey are periodically reported in The Journal. The questionnaire also calls for comments and suggestions of ways to further improve the medical corps as well as ways and means whereby organized medicine can be of greater assistance to military physicians. Consequently, the results of the survey serve as a basis for recommendations and conferences with representatives of the military establishments.

Table 1.—*Age Distribution of Physicians by Five-Year Age Groups*

Age	Army	Navy	Air Force
25-29	154	214	216
30-34	276	232	136
35-39	121	136	24
40-44	30	25	5
45-49	10	2	1
50-54	3	...	1
55-59	...	1	...
60-64	3	2	...
65-69	...	2	...
Total	600	614	383

This report covers the period from Jan. 1, 1956, to Dec. 31, 1956. During that period, the Council sent out 2,519 questionnaire forms and, of these, 1,600 completed ones were returned, representing a 64% response.

The order of presentation has been varied somewhat from that of previous years in that more information in both narrative and table form is furnished for the year 1956. Accordingly, table numbers for 1956 will not correspond to those of previous years.

The age distribution of responding physicians in the Army, Navy, and Air Force is disclosed in table 1.

Number of Years Since Graduation

More than half of the physicians replying were graduated from medical school subsequent to 1949; the second largest group graduated during the period 1945-1949. None failed to indicate the year of graduation from medical school. Table 2 discloses the complete tabulation.

Years of Residency Training

The largest group replying to this question had no residency training, while the second largest group had but one year residency training at the time of entrance on active duty. A complete breakdown is given in table 3.

Occupation at Time of Entering Service

The largest groups of physicians who served in the Army and Navy were engaged in general practice at time of entrance on active military duty, while the largest group in the Air Force was in internship. The summary report for the year 1955 reflected that the largest groups in the Army and Air Force were engaged in general practice, while the largest group in the Navy was in residency training prior to active military service. In the Army and Navy groups specialty practice was second, while in the Air Force general practice was second. Table 4 indicates the percentage distribution by services according to type of practice at time of entering military service.

Table 2.—*Number and Percentage Distribution of Physicians Graduated from Medical Schools in Selected Intervals*

Interval	No.	%
Before 1940	23	1.4
1940-1944	171	10.7
1945-1949	578	36.1
1950 and later	828	51.8
Total	1,600	100.0

Table 3.—*Percentage Distribution of Total Physicians by Years of Residency*

Years	No.	%
None	410	25.6
1	308	19.3*
2	223	13.9
3	277	17.3
4	159	10.0*
Other	223	13.9
Total	1,600	100.0

* Forced to total 100%.

Table 4.—*Percentage Distribution of Physicians According to Type of Practice at Time of Entering Military Service*

	Army, %	Navy, %	Air Force, %
Internship	16.2	15.8	35.9
Residency	19.6	21.0	11.5
General practice	24.4	26.6*	28.8
Specialty practice	24.2	26.2	13.6
Other	15.6	10.4	10.2
Total	100.0	100.0	100.0

* Forced to total 100%.

Number of Physicians Holding Board Certificates by Field of Specialization

Table 5 shows the detailed numbers, by specialty and branch of services, of physicians holding board certificates. Of the 293 persons responding to the question, 131 holding board certificates were in the Army, 125 were in the Navy, and 37 were in the Air Force. The specialties covered over 19 different fields, of which the largest was internal medicine, the second largest was surgery, and the third largest was pediatrics. In the previous report for the year 1955 internal medicine was first followed by pediatrics and surgery. By branch of service, a total of 22% of those responding in the Army, 20% of those in the Navy, and 10% of those in the Air Force had board certificates.

Table 5.—*Number of Physicians Holding Board Certificates by Field of Specialization*

	Army	Navy	Air Force
Pediatrics	15	22	8
Psychiatry and neurology	6	12	2
Orthopedic surgery	3	2	...
Dermatology and syphilology	3	1	...
Radiology	13	15	2
Urology	3	2	2
Obstetrics and gynecology	7	3	1
Internal medicine	26	23	6
Ophthalmology	3	4	1
Pathology	13	5	6
Otolaryngology	2	3	1
Surgery	24	21	7
Anesthesiology	6	3	...
Plastic surgery	...	...	...
Neurological surgery	1	4	...
Physical medicine	...	...	...
Preventive medicine and public health	2	...	...
Proctology	...	...	...
Thoracic surgery	1	2	1
Other	3	3	...
Total	131	125	37

Government Medical Education Received

Of the 1,600 physicians responding, a total of 533 stated that they had received assistance from the government in their medical education. There were 1,067 who indicated they had received no government assistance. The largest single group receiving government assistance was under the Army Specialized Training Program. The next two largest groups were under the Navy V-12 Program and the GI Program. Table 6 shows the percentages by branch of service. Of the responding physicians, 64% of those who served in the Army, 67.3% of those in the Navy, and 70% of those in the Air Force received no government assistance.

Table 6.—*Percentage Distribution of Physicians by Type of Governmental Medical Education Received*

	Army, %	Navy, %	Air Force, %
Army Specialized Training Program	50.9	31.8	20.0
Navy V-12	14.4	31.8	13.9
GI Bill	17.1	13.9	11.3
ASTP and GI Bill	7.9	5.0	6.1
Navy V-12 and GI Bill	2.3	8.5	6.1
Other	7.4	9.0	42.6
Total	100.0	100.0	100.0

Training Received While in Service

There were 895 of a total of 1,597 responding physicians who received military medical training while on active duty in the Army, Navy, and Air Force. The Medical Field Service School accounted for the largest number, with the School of Aviation Medicine the second largest group. Table 7 sets forth the number and percentage distribution of physicians by type of training received in each branch of service.

Table 7.—*Number and Percentage Distribution of Physicians by Type of Governmental Medical Training Received*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Basic course, medical field service school	490	81.7	46	7.5	90	23.5
Advanced courses, medical field service school	5	0.8	0	0.0	1	0.3
School of aviation medicine	0	0.0	26	4.2	130	33.9
Marine medical officers training	0	0.0	24	3.9	0	0.0
Marine field service training	0	0 0	8	1.3	0	0.0
Amphibious forces training school	0	0.0	39	6.4	0	0.0
Other schools	5	0.8	21	3.4	10	2.6
None of the above	100	16.7	450	73.3	152	39.7
Total	600	100.0	614	100.0	383	100.0

Physicians' Evaluation of Medical Military Training

The majority of physicians filling out the questionnaire felt that all important features of medical military training had been satisfactorily covered. A small percentage indicated the training was unsatisfactory but gave no specific reasons. Others stated reasons why they considered their tour of service unsatisfactory. According to services, the response to this multiple-answer question was 600 from the Army, 614 from the Navy, and 383 from the Air Force. Table 8 shows percentages by branch of service.

Table 8.—*Physicians' Evaluation of Medical Military Training*

	Army, %		Navy, %		Air Force, %	
Satisfactory	81.5		66.6		84.6	
Unsatisfactory	18.5		33.4		15.4	
Unsatisfactory and insufficient training in						
Basic orientation and indoctrination		22.9		51.3		29.7
Military customs, administration, regulations, etc.		46.7		27.0		35.9
Military medicine and surgery		23.8		15.5		23.1
Miscellaneous		6.6		6.2		6.3*
	100.0		100.0		100 0	
Total		100.0		100.0		100.0

* Forced to total 100%.

Physicians' Evaluation of Assignment

The majority of responding physicians stated that their longest and next longest assignments were almost completely, or partially but satisfactorily, in line with their training and experience. Consistent with this evaluation, the majority also expressed satisfaction with the same assignments. In answer to both questions, a greater portion of the Air Force physicians responded favorably than did Army or Navy medical officers. Tables 9 and 10 disclose the percentages by branch of service.

TABLE 9.—*Relation of Assignments in the Service to Training and Experience*

Questions and Replies	Army, %	Navy, %	Air Force, %
Was longest assignment in line with training and experience?			
Almost completely	60.7	54.7*	67.3
Partially, but satisfactorily	13.1	17.9	19.8
Partially, not satisfactorily	18.0*	15.8	8.4
No, hardly at all	7.2	11.6	4.5
Total	100.0	100.0	100.0
Was next longest assignment in line with training and experience			
Almost completely	51.1	51.4	60.7
Partially, but satisfactorily	20.4	21.0	17.4
Partially, not satisfactorily	13.9	12.2*	11.6
No, hardly at all	14.6	12.4	10.3
Total	100.0	100.0	100.0

* Forced to total 100%.

TABLE 10.—*Physicians' Satisfaction With Assignment*

Assignment and Response	Army, %	Navy, %	Air Force, %
Longest assignment			
Very satisfied	52.6	40.5	41.3
Fairly satisfied	26.7	32.0	43.7
Dissatisfied	12.8	15.5*	10.8
Very dissatisfied	7.9	12.0	4.2
Total	100.0	100.0	100.0
Next longest assignment			
Very satisfied	39.9	45.6	46.9
Fairly satisfied	34.6	32.3	32.2
Dissatisfied	14.9	12.7*	14.7*
Very dissatisfied	10.4	9.4	5.4
Other	0.2*	...	0.8
Total	100.0	100.0	100.0

* Forced to total 100%.

Types of Patients Treated

One of the questions was designed to determine the percentage of time devoted by physicians to military personnel, dependents of military personnel, and administrative duties, both at domestic and overseas stations. Table 11 sets forth the percentages.

TABLE 11.—*Percentage of Time Spent in Treating Military Personnel, Dependents of Military Personnel, and Others*

Persons Treated	75-100%	50-75%	About 50%	25-50%	Under 25%	No Response
Military personnel						
Domestic	20.4	13.2	13.0	14.1	19.1	20.2
Overseas	18.9	5.2	5.4	6.3	6.3	57.9
Dependents of military personnel						
Domestic	17.9	8.8	11.9	17.0	24.3	20.1
Overseas	3.9	3.4	4.6	6.5	10.1	71.5
All other duties						
Domestic	8.6	1.4	2.0	6.2	29.5	52.3
Overseas	2.9	1.3	1.9	3.9	15.6	74.4

Types of Nonmilitary Medical Care Provided

The question which was designed to determine the types of medical duties most frequently performed for nonmilitary persons elicited the information that in all three branches of the service outpatient care ranked first at domestic and overseas stations. In the Army, general medical and hospital care was second in the United States, while pediatrics was second at overseas stations. In the Navy, pediatrics was second at domestic installations, while general medical and hospital care was second overseas. Obstetrics and gynecology was second for Air Force physicians in the United States, and pediatrics was second at overseas bases. Table 12 reveals the types of services rendered and with what frequency.

TABLE 12.—*Type of Service Provided to Dependents of Military Personnel*

Type of Service	Army, %	Navy, %	Air Force, %
Domestic			
Outpatient care	30.1	36.1	28.9
Surgery	11.2	11.8	11.6
General medical and hospital care	13.2	12.6	14.8*
Obstetrics and gynecology	10.9	12.4	15.9
Pediatrics	11.4	15.3	15.3
Other	23.2	11.8	13.5
Total	100.0	100.0	100.0
Overseas			
Outpatient care	21.5	10.9	17.9
Surgery	6.9	4.0	6.4
General medical and hospital care	7.1	6.7	7.7
Obstetrics and gynecology	6.9	4.4	7.5
Pediatrics	7.5	5.6	8.7*
Other	50.1	68.4	51.8
Total	100.0	100.0	100.0

* Forced to total 100%.

Medical Care of Dependents of Military Personnel Which Could Have Been Adequately Performed by Civilian Medical Personnel

With respect to service in the United States, the majority of responding physicians were of the opinion that all medical care of nonmilitary persons could have been adequately performed by civilian medical personnel. In the three branches of the service, 816 of 1,316 physicians, or 62%, so responded. However, in regard to overseas service only 127 of 495 physicians, or 26%, were of that opinion. In fact, 197 of 495 physicians, or nearly 40%, stated that none of the medical care of nonmilitary persons at overseas stations could have been adequately performed by civilian medical personnel. Table 13 shows the percentages of physicians in the Army,

TABLE 13.—*Physicians Indicating Feasibility of Medical Care of Nonmilitary Personnel by Civilian Medical Personnel*

Type of Service	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Domestic						
All care	263	58.8	343	62.2	210	66.0
Most care	86	19.3*	121	22.0	76	23.9
Some care	80	17.9	77	14.0	29	9.1
None	18	4.0	10	1.8	3	1.0
Total	447	100.0	551	100.0	318	100.0
Overseas						
All care	58	23.7	34	27.9	35	27.4*
Most care	33	13.5	13	10.6*	17	13.3
Some care	64	26.1	14	11.5	30	23.4
None	90	36.7	61	50.0	46	35.9
Total	245	100.0	122	100.0	128	100.0

* Forced to total 100%.

Navy, and Air Force and their opinion in regard to the feasibility of the treatment of dependents of military personnel by civilian medical personnel at both domestic and overseas bases.

Physicians' Evaluation of Staffing Conditions

One of the questions was designed to obtain the opinion of physicians as to staffing conditions of nurses, enlisted medical personnel, physicians, dentists, and others at the two units where the physician served his longest and next longest assignments. With respect to the longest assignment, the tabulation of this multiple-answer question indicated that in the Army replies of overstaffing totaled 691, understaffing 823, and adequate staffing 1,470. In the Navy, overstaffing totaled 738, understaffing 811, and adequate staffing 1,415. The Air Force tabulation revealed 461 replies of overstaffing, 636 of understaffing, and 819 of adequate staffing. The response to the question concerning the next longest assignment revealed that in the Army overstaffing totaled 671, understaffing 701, and adequate staffing, 1,174. In the Navy, the results were 697, 702, and 1,243 respectively, while the Air Force tabulation was 414, 473, and 710 respectively. Table 14 reflects, in detail, the percentages relative to overstaffing, understaffing, and adequate staffing conditions in the three military services for the physicians longest and next longest assignments.

TABLE 14.—*Medical Staffing Conditions in the Armed Forces*

For longest assignment	Nurses, %	Enlisted Medical Personnel, %	Physicians, %	Dentists, %	Others, %	Total, %
Army						
Overstaffed	5.1	11.1	16.0	15.6	52.0	23.1
Understaffed	32.6	15.6	29.0	16.5	38.6	27.6
Adequate	62.3	73.3	55.0	67.9	9.4	49.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Navy						
Overstaffed	4.5	12.9	27.6	12.9	51.6	24.9
Understaffed	30.8	26.3	21.4	15.5	38.2	27.4
Adequate	64.7*	60.8	51.0	71.6	10.2	47.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Air Force						
Overstaffed	5.2	13.0	17.2	23.1	54.6	24.1
Understaffed	49.6	36.0	31.7	17.2*	31.3	33.2
Adequate	45.2	51.0*	51.1	59.7	14.1	42.7
Total	100.0	100.0	100.0	100 0	100.0	100.0
For next longest assignment						
Army						
Overstaffed	4 3	13.5	20.2	14.1	39.9	26.4
Understaffed	26.2	11.2	23.5	13.1	36.9	27.5
Adequate	69.5	75.3	56.3	72.8	23.2	46.1
Total	100.0	100.0	100.0	100.0	100.0	100 0
Navy						
Overstaffed	5.8	15.8	23.3	10.3	40.2	26.4
Understaffed	17.9	14.8	18.9	13.5	38.3	26.6
Adequate	76.3	69.4	57.8	76.2	21.5	47.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Air Force						
Overstaffed	6.1	11.1	15.2	13.7	39 8	25.9
Understaffed	34.3	21.2	24.0	16.5	34.8	29.6
Adequate	59.6	67.7	60.8	69.8	25.4	44.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

* Forced to total 100%.

Unnecessary or Wasted Aspects of Military Training

There were 477 physicians who responded affirmatively to the question, "Were there any aspects of your military training that were unnecessary or wasted?" Negative answers were received from 1,120 medical officers. Of those who answered affirmatively, the majority were of the opinion that performance of nonmedical duties was the area of greatest waste in their military training. Table 15 sets forth the reasons with percentages.

TABLE 15.—*Unnecessary or Wasted Aspects of Military Training*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Not in field for which trained	9	4.6	8	4.4	2	1.8
No training or experience in field	5	2.6	6	3.3	2	1.8
Capable of more responsible medical duties	22	11.2	62	34.1	13	11.3
Nonmedical duties	144	73.5	67	36.8	84	73.0
Miscellaneous	13	6.6	28	15.4	10	8.7
No reason given	3	1.5	11	6.0	4	3.4
Total	196	100.0	182	100.0	115	100.0

Physicians' Suggestions for Making Military Service More Attractive to Medical Men

There were 1,476 physicians who offered suggestions for making military service more attractive for the practice of medicine. Only 124 physicians felt that nothing could be done to make military service more attractive to medical men. Table 16 sets forth the suggestions from physicians in the three branches of military service.

Suggestions for Improvement of Services Furnished by Medical Associations to Military Physicians

A total of 515 physicians, or 32%, offered suggestions in response to the question concerning the role of national and local medical associations in maintaining closer contact or rendering better service to their members who served as physicians in the armed forces. The suggestions are tabulated in table 17. The other 1,082 physicians who returned the questionnaire offered no suggestions.

TABLE 16.—*Physicians' Suggestions for Making Military Service More Attractive to Medical Men*

	Army		Navy		Air Force	
Suggestions	No.	%	No.	%	No.	%
Improved utilization of medical personnel	376	19.4	440	21.4	224	17.2
Higher rank; merit promotions	149	7.7	121	5.9	84	6.4
Increase in pay	268	13.8	241	11.7	204	15.6
Choice of stable location	107	5.5	150	7.3	83	6.4
Adequate housing for family	101	5.2	82	4.0	59	4.5
Opportunity to practice specialty	83	4.3	96	4.7	40	3.1
Residency or further training	72	3.7	64	3.1	60	4.6
More capable commanding officers	92	4.7	138	6.7	105	8.0
Freedom from nonmilitary interference	102	5 2	96	4.7	75	5.8*
Independent medical service without rank	142	7.3	124	6.0	103	7.9
Other	450	23.2	502	24.5*	268	20.5
Total	1,942	100.0	2,054	100 0	1,305	100.0

* Forced to total 100%.

Physicians Who Would Voluntarily Remain in Service

In response to the question relative to military service beyond the obligated tour of duty, 929 physicians indicated they would not be willing to stay in military service for more than two years of service under any conditions except total war. There were 671 physicians who indicated they would serve an additional period under certain conditions. Many physicians listed more than one condition. Table 18 reflects the reasons or conditions under which an additional period of service would be acceptable.

TABLE 17.—*Suggestions for Improvement of Services Furnished by Medical Association to Military Physicians*

Suggested Society Activities	Army	Navy	Air Force
More information, newsletters, etc.	49	36	16
Personal visits by civilian physicians to evaluate grievances	85	77	56
Invitation of military physicians to civilian medical meetings	32	39	32
Assistance in locating a position after discharge	8	16	3
Assistance in preventing evasion of military service	4	6	2
Distribution of questionnaires to physicians in service	26	22	18
Provision of specialists for clinical conferences	*17*	*18*	*10*
Miscellaneous suggestions	23	25	20
Total	244	239	157

TABLE 18.—*Distribution Indicating Conditions of Voluntary Extension of Service Beyond Two Year Requirement*

	Army		Navy		Air Force	
Conditions	No.	%	No.	%	No.	%
Demonstrated need	28	4.7	15	2.3	8	1.8
All doctors serving on an equitable basis	16	2.7	10	1.5	7	1.5
Promotion to higher rank	31	5.3	30	4.6	30	6.6
Increase in pay	71	12.0	62	9.5	69	15.1
Given residency or further training	34	5.8	41	6.3	30	6.6
Opportunity to practice specialty	37	6.3	57	8.7	34	7.4
Choice of duty assignment	33	5.6	59	9.0	40	8.8
Choice of stable location	48	8.1	62	9.5	39	8.5
Living quarters for family	26	4.4	18	2.7	12	2.6
Request for extension at status quo refused	2	.3	3	.4	2	.4
Extended service time voluntary	18	3.1	29	4.4	20	4.4
Miscellaneous conditions	246	41.7	269	41.1	166	36.3
Total	590	100.0	655	100.0	457	100.0

Preferred Branch of Service for Practice of Medicine

In response to the question of preference if the physician were going to practice medicine in a federal government agency, 608 physicians stated a preference for the armed forces. A total of 971 physicians expressed a preference for other agencies of the federal government, while 18 physicians had no preference. Of those who preferred the armed forces, the majority chose the branch of service in which they had served. Table 19 sets forth the preferences as to branch of service.

Distribution of Physicians by Rank at Time of Discharge

The majority of physicians in the Army and Air Force held the rank of captain at the time of their release from active military duty. However, in the Navy at the time of separation, the majority were in the lowest rank of lieutenant junior grade. There were 1,597 physicians who answered this question. The survey indicated that approximately 36% of those who reported were in the lowest rank, while 44% held the rank of captain or lieutenant senior grade. There were approximately 20% with the rank of major or lieutenant commander and higher. Table 20 indicates the number and percentages by rank within the three services.

Length of Active Service as a Medical Officer

In the Army there were 600 responding physicians who served an average of 15½ months in the United States and 9 months at overseas stations. There were 614 naval medical officers who had an average of 20 months active duty in the United States and 5 months overseas. Responses from 383 physicians in the Air Force revealed an average tour of duty of 21 months in the United States and 6 months at overseas bases.

TABLE 19.—*Preferred Branch of Service for Practice of Medicine*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Army	152	74.5	5	2.1	5	3.0
Navy	3	1.5	218	92.4	2	1.2
Air Force	47	23.0	12	5.1	161	95.8
Other	2	1.0	1	.4	...	...
Total	204	100.0	236	100.0	168	100.0

TABLE 20.—*Distribution of Physicians by Rank at Time of Discharge*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
1st. lieut.-lieut. j.g.	*179*	*29.8*	*392*	*63.9*	*4*	*1.0*
Capt.-lieut. s.g.	342	57.0	21	3.4	341	89.0
Major-lieut. commander	41	6.8	115	18.7	5	1.3
Lieut. col.-commander	7	1.2	53	8.6	1	0.3
Col.-capt.	...	...	3	0.5	...	...
Other	31	5.2	30	4.9	32	8.4
Total	600	100.0	614	100.0	383	100.0

TABLE 21.—*Percentage Distribution of Physicians According to Reserve Status*

	Army, %	Navy, %	Air Force, %
Retained commission	34.8	68.2	46.5
Resigned commission	64.7	31.8	53.5
No response	0.5	0.0	0.0
Total	100.0	100.0	100.0

Reserve Status

Of the 1,597 physicians reporting, 806 indicated they retained their reserve commissions while 788 resigned their commissions. There were three who did not respond. By services, the Army had 209 retaining commissions and 388 resigning; the Navy had 419 retaining and 195 resigning; and the Air Force had 178 retaining and 205 resigning their commissions. Table 21 reflects the percentages by branch of service.

MEDICAL NEWS

CALIFORNIA

Harvard Alumni Meeting.—There will be a dinner meeting of the Harvard Medical Alumni Association of Southern California on April 23, 6:30 p. m., at the California Club, Los Angeles, and all graduates from Harvard Medical School are invited. Meetings of the California Medical Association and the American College of Obstetricians and Gynecologists will take place during that week in Los Angeles. Reservations can be secured from Dr. Lowell F. Bushnell, 1321 N. Vermont Ave., Los Angeles 27, chairman of the executive committee.

Funds for Cardiovascular Research.—Applications for funds to support research in the cardiovascular field will be received until April 15, by the Los Angeles County Heart Association. Applications will be considered on a priority basis as follows: (1) research into the causes and means of prevention of heart disease; (2) research concerning treatment of heart disease; and (3) studies of methods of diagnosis. Applications are invited for project grants-in-aid, fellowships, and established investigatorships. The committee will consider the applications early in May and will interview each applicant. Grants will be effective July 1. Ten copies of each application must be submitted. Information may be obtained from the Heart Association, 660 S. Western Ave., Los Angeles, DUnkirk 5-4231.

Annual Tuberculosis Meeting.—The annual meeting of the California Tuberculosis and Health Association will be held April 10-12 at the Villa Hotel, San Mateo. Joint and special sessions will be held with the California Trudeau Society, California Sanatorium Association, and California Conference of Tuberculosis Workers. Speaker at the opening joint session will be Dr. Robert H. Ebert, professor of medicine, Western Reserve University, School of Medicine, Cleveland, whose topic is "New Horizons in Research." Other speakers are as follows:

Our Common Problem—Alcoholism, Mrs. Marty Mann, executive director, National Council on Alcoholism.
Radiation and Research, Dr. Robert R. Newell, consultant, Naval Radiological Defense Laboratory, San Francisco.
Program Research Via the Tuberculin Test, Dr. H. Cabot Brown, field director for the association's tuberculin testing team.
Small Associations and Research, Dr. Edna M. Winter, Fresno.
Review of Surgery, Dr. Edgar W. Davis, Georgetown University, Washington, D. C.

A symposium on chemotherapy is planned, and a summary address, "The Real Needs in Pulmonary Research," will be given by Dr. Averill A. Liebow, John Ely Professor of Pathology, Yale University, New Haven, Conn. For information write the California Tuberculosis and Health Association, 130 Hayes St., San Francisco.

COLORADO

Dr. Wasson Receives Radiology Award.—Dr. W. Walter Wasson, Denver radiologist, was awarded the Gold Medal of the American College of Radiology Feb. 7, for his "outstanding contributions to the art and science of this medical specialty." Only 18 other radiological leaders in the nearly 40-year history of the College have been awarded the Gold Medal.

Society News.—Officers of the Colorado Radiological Society for the current year are: president, Dr. James W. Lewis, of Colorado Springs; vice-president, Dr. Emanuel Salzman, of Lakewood; secretary, Dr. Lorenz R. Wurtzebach, 601 E. 19th Ave., Denver; treasurer, Dr. Charles Gaylord, Denver. ——The Colorado Society of Clinical Pathologists has elected the following officers for 1957-1958: Dr. William D. Millett, president; Dr. Silas M. P. Ashe, vice-president; Dr. Paul K. Hamilton Jr., secretary-treasurer; and Dr. William C. White, councilor.

CONNECTICUT

John H. Bumstead Memorial Fund.—Creation of a John H. Bumstead Memorial Fund for purchase of publications for the Yale Medical Library has been announced. The fund honors the memory of the late Dr. John H. Bumstead, associate clinical professor of the Yale School of Medicine. Associates of the Yale Medical Library have established the fund, with many of Dr. Bumstead's former medical colleagues, friends, and patients already contributing to the continuing memorial. Books and publications purchased through income of the fund will be identified by a special bookplate which is being designed.

Dr. Southwick to Head Orthopedics Section.—Dr. Wayne O. Southwick, a member of the Johns Hopkins medical faculty, has been appointed associate professor of orthopedic surgery and head of the Section in Orthopedics at the Yale School of Medicine, New Haven, effective July 1. Dr. Southwick joined the Johns Hopkins staff in 1950. He was on

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Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

leave in 1952-1953 for military duty and on returning in 1954 was appointed an instructor in orthopedic surgery. He was promoted to assistant professor in 1957. At Yale he will succeed Dr. Charles O. Bechtol, who resigned to accept an appointment in California.

State Medical Meeting in Stratford.—The 166th annual meeting of the Connecticut State Medical Society will be held in the High School at Stratford, April 29-May 1. Out-of-state speakers will present the following:

Staphylococci and the Use of Antibiotics, Dr. Wesley W. Spink, Minneapolis, Minn.
Spontaneous Regression of Malignancy, Dr. Tilden C. Everson, Chicago.
Some Uses of Isotopes in Medicine, Dr. Solomon A. Berson, Bronx, N. Y.
Thyroid Disease in Children, Dr. Robert W. Buxton, Baltimore.
Rehabilitation of the Patient with Coronary Artery Disease, Dr. Lewis H. Bronstein, New York City.
Reactions Due to Drug Idiosyncracy, Dr. Robert P. McCombs, Boston.
Current Status of Anti-Hypertensive Drugs, Dr. William Hollander, Boston.
Space Medicine, Brig. Gen. Wilford F. Hall, M.C., U.S.A.F., Wright-Patterson Air Force Base, Ohio.
Progress in Cancer Research, Dr. Cornelius P. Rhoads, New York City.

A panel discussion on adoptions will be held the afternoon of April 30. Dr. Aims C. McGuinness, special assistant for health and medical affairs to the Secretary of Health, Education and Welfare, Washington, D. C., will present "The Role of the Federal Government in the Field of Medical Care" at the annual dinner April 30. A film, "The Doctor Defendant," will be shown May 1. For information write the Connecticut State Medical Society, 160 St. Ronan St., New Haven 11, Conn.

ILLINOIS

Chicago

Neurological Society Lecture.—The Leo Kaplan Memorial Lecture will be given before the Chicago Neurological Society April 8 in the Beaubien Room of Stouffer's Restaurant, Prudential Building, Prudential Plaza, at 8 p. m., by Charles M. Pomerat, Ph.D., professor of cytology, University of Texas, School of Medicine, on the subject, "Recent Advances in the Study of Living Nervous Tissue."

Summer Camp for Diabetic Children.—The Summer Camp for Diabetic Children will be conducted for the 10th year under the auspices of the Chicago Diabetes Association from July 20 through Aug. 10 at Holiday Home, Lake Geneva, Wis. Boys and girls from 8 through 14 years of age are eligible. The camp will be staffed by resident physicians, a nurse, two dietitians, and a laboratory technician, in addition to the regular counseling and domestic staff of Holiday Home. Rates for Summer Camp are arranged in accordance with individual circumstances. Applications may be obtained from, and inquiries should be addressed to The Chicago Diabetes Association, 5 S. Wabash Ave., Chicago 3, Phone ANdover 3-1861.

KENTUCKY

County Society Officers Conference.—Speakers at the eighth annual County Society Officers Conference March 27, sponsored by the Kentucky State Medical Association, included the following: Dr. Gunnar Gundersen, LaCrosse, Wis., president-elect, A. M. A.; Dr. Thomas H. Alphin, director of the Washington, D. C., office of the A. M. A.; Mr. Arthur J. Clephane, Philadelphia, attorney for the Pennsylvania State Medical Society; Mr. John Castellucci, Chicago, executive director of the Blue Shield Medical Care Plans; Mr. Oliver Ebel, Topeka, executive secretary of the Kansas State Medical Society; Major General Paul I. Robinson, executive director, Office for Dependents' Medical Care, Department of the Army, Washington, D. C., and Mr. Robert B. Throckmorton, Des Moines, attorney for the Iowa State Medical Society.

MARYLAND

Eliot Infirmary for Retarded Children.—The Martha M. Eliot Infirmary of the District Training School of the Children's Center, Laurel, named to honor Dr. Eliot's years of service to the cause of child and maternal health, was dedicated March 9. The new building, which is designed for the care of severely retarded, helpless children is, as is the center, under the direction of the Department of Public Welfare of the District of Columbia. The Children's Center, of which the infirmary is a part, also embraces an educational program for parents and foster parents of the mentally retarded. The Martha M. Eliot Infirmary was built at a cost of $813,500. It includes space for 200 children. Opportunities will be offered to medical persons working in the new infirmary to develop diagnostic and classification skills. Dr. Eliot, who was guest of honor at the dedication, is head of the department of maternal and child health, Harvard University, Boston.

Personal.—Dr. George W. Sprehn has been appointed director of the Community Psychiatric Clinic of Montgomery County. He succeeds Dr. Henry A. Segal, who resigned last September to enter private practice. Dr. Sprehn has been serving on an interim basis since Nov. 1.——Appointment of Dr. William B. Wood Jr., vice-president in charge of medical institutions, Johns Hopkins University, Baltimore, to the National Advisory Allergy and Infectious Diseases Council was announced Feb. 28 by the Surgeon General, U. S. Public Health

Service. Dr. Wood is a trustee of the Rockefeller Foundation, a member of the Armed Forces Epidemiological Board, and a consultant to the Walter Reed Army Medical Center.

MASSACHUSETTS

University News.—The Alpha Omicron Chapter of the Phi Delta Epsilon Fraternity at the Boston University School of Medicine, will hold its annual Aaron Brown Lecture April 9, 7:30, in the auditorium of Boston University School of Medicine. The guest speaker will be Dr. Dwight Emary Harken, associate professor of surgery, Harvard Medical School. The general topic will be the "Past, Present, and Future of Cardiac Surgery."

Law-Medicine Research Institute.—A Law-Medicine Research Institute has been established at Boston University, president Harold C. Case, LL.D., has announced. The institute, working cooperatively with the university's schools of law and medicine, headed respectively by deans Elwood H. Hettrick, LL.D., and Dr. Chester S. Keefer, will establish a program of research and training in the interdisciplinary areas of law, medicine, and the behavioral sciences. It will also act as a clearing-house for information on activities in the medico-legal area. Named as director of the institute is Prof. William J. Curran, of Newton, a professor of law and legal medicine at the university. Beginning with the present semester, the institute will conduct courses in medico-legal areas and will regularly sponsor a lecture series for the practicing members of the profession. This spring, New York attorney Emile Zola Berman is scheduled to speak. The complete National Advisory Council to the Institute includes among others C. Joseph Stetler, Director, Law Department, American Medical Association.

MICHIGAN

Hospital News.—A new $1,250,000 wing at the Evangelical Deaconess Hospital, Detroit, was dedicated Dec. 15. In commemoration of the opening of the addition Dr. Harry Goldblatt, professor of experimental pathology, Western Reserve University School of Medicine, Cleveland, presented a lecture, "Experimental Cancer," March 15. The new wing has five floors.

Mobile Laboratory for Pollution Testing.—A new mobile laboratory–classroom has started visiting sewage treatment plants throughout the state. The $14,000, custom-built, 32-foot trailer was purchased by the Michigan Water Resources Commission out of federal funds allocated to Michigan for stream pollution abatement. The trailer, operated by state health department chemists and engineers, has two purposes: (1) to evaluate local plant performance by helping local operators to detect and investigate causes of reduced efficiency in the plants; (2) to train plant operators to perform chemical and physical tests. Before July 1 the unit will visit about 25 plants in the southern part of the state and eventually will visit most of the 200 publicly owned sewage treatment plants in Michigan.

Dr. Weber to Give Hodges Lecture.—The Fred Jenner Hodges Radiological Society will present the first Fred Jenner Hodges Lecture April 11, 4:30, in the Rackham Amphitheater, University of Michigan, Ann Arbor. Dr. Harry M. Weber, head, Section of Diagnostic Roentgenology, Mayo Clinic, will speak on "The Roentgenologic Contribution to the Diagnosis of Abnormalities of the Ileocecal Coil."

University News.—The Omega Chapter of the Phi Delta Epsilon Fraternity at the University of Michigan, Ann Arbor, will hold its annual lectureship April 17. The guest speaker will be Dr. Philip Thorek, chairman, department of surgery, University of Illinois, Chicago. The lecture will deal with "intestinal obstruction with special attention directed toward fluid management."

Annual Cancer Day in Flint.—The Genesee County Medical Society will present its 13th annual cancer day program April 9 in Flint. Papers to be read include:

The Role of Angiography in the Diagnosis of Tumors, Dr. Benjamin Felson, Cincinnati.
Radical Pelvic Surgery for Lower Abdominal Cancer, Dr. Eugene M. Bricker, St. Louis.
Primary Cancer of the Lymph Nodes, Dr. Alfred A. Gellhorn, New York City.
Gastric Ulcer and Gastric Cancer, Dr. Isidor S. Ravdin, Philadelphia.
The Pathology of Gastrointestinal Cancer, Dr. Robert C. Horn Jr., Detroit.
Cancer of the Head and Neck, Dr. Edgar L. Frazell, New York City.

For information write the Genesee County Medical Society, 900 Begole St., Flint, Mich.

NEBRASKA

Dr. Alvarez to Give Poynter Lecture.—Dr. Walter C. Alvarez, professor of medicine emeritus of the University of Minnesota, will be the C. W. M. Poynter Lecturer for 1958 at the Poynter dinner at the Town House, Omaha, presented by the University of Nebraska College of Medicine, April 10. Dr. Alvarez, now of Chicago, will also deliver a campus convocation address on the same day. The annual Poynter dinner is a highlight of the Spring Post-Graduate Assembly on "Recent Advances in Clinical Medicine."

NEW JERSEY

Dr. Phillips Honored.—The community of Englewood, N. J., recently honored Dr. Walter Phillips and 800 people turned out to see him get the "Outstanding Citizen" award of 1958. The Englewood lodge of B'nai B'rith in cooperation with 25 local civic organizations honored Dr. Phillips and were generous with tributes. The 78-year-old doctor served as president of his local medical society in 1920 and the Medical Society of New Jersey presented him with its Golden Merit Award in 1957. The minister of the First Presbyterian Church said "no matter what he may have, it is but a small part of what he has given away or neglected to collect."

Personal.—Dr. V. D. Mattia Jr., Nutley, has been appointed director of medical research for Hoffmann–La Roche Inc. Dr. Mattia, formerly director of medical information, succeeds Dr. E. L. Severinghaus, who has retired.——Dr. Earle L. Warren, head, radiology department, Paterson General Hospital, has been elected president of the Greater Paterson Chamber of Commerce, filling the vacancy caused by the resignation of the president. It is the first time in the chamber's 50 year history that a physician has served as president. Dr. Warren has been a member of the chamber's Governmental Affairs Committee for six years.

Dr. Connolly Receives Martland Award.—The Essex County Pathological and Anatomical Society has announced that Dr. Henry A. Connolly Jr. has won the annual Harrison Stanford Martland award competition for 1957. Dr. Connolly, a resident in general practice at the Overlook Hospital in Summit, presented his paper on "Graphic Reconstruction of Diseased Blood Vessels (Applied to a Study of Osler's Disease)" at the annual meeting of the society March 27. The award comprising a gift of $250 and an engrossed scroll is presented each year by the Society as a memorial to Dr. Harrison Stanford Martland, late medical examiner and pathologist to the Martland Medical Center.

NEW YORK

Community Honors Dr. Jolls.—The citizens of Orchard Park, a suburban Buffalo community, held a dinner and meeting March 4 to honor Dr. Willard B. Jolls, 88, who has served as local physician for over six decades. Appointed health officer for the town in 1918, Dr. Jolls has passed four decades in that post, a record in the Erie County Health Service. In 1945 the Erie County Medical Society honored him with their medal for 50 years of medical practice. For almost 25 years he wrote a weekly column, "Timely Health Talks," in the local paper.

Personal.—Dr. Daniel H. Deyoe, of Syracuse, became medical director of the Crouse-Hinds Company Dec. 16.——Dr. Hobart A. Reimann, recently chief of internal medicine at the Binghamton City Hospital, Binghamton, has taken up his duties as chief of internal medicine at the Shiraz Medical Center, Iran. Dr. Reimann has been a member of the faculty of Jefferson Medical College, Philadelphia, Peking University Medical College, China, and a visiting professor at the American University in Beirut.

State Tuberculosis Meeting.—The annual meeting of the New York Tuberculosis and Health Association, will be held April 30 at the Hotel Statler, New York City. Dr. William R. Barclay, assistant professor of medicine, University of Chicago, will present "Tuberculosis Research in the Atomic Age" following the luncheon. Dr. James E. Perkins, managing director, National Tuberculosis Association, will speak on "The 2,000,000 Yesterday, Today and Tomorrow," and Dr. Theodore L. Badger, president, American Trudeau Society, will present "A New Look at an Old Problem—Sex and Tuberculosis." A panel discussion, "The Hunt for the 10,000 Unknowns in New York City," will be moderated by Dr. Berwyn F. Mattison, executive secretary, American Public Health Association. For information write the New York Tuberculosis and Health Association, Inc., 386 Fourth Ave., New York 16.

New York City

Appoint Pharmacology Department Head.—William G. Van Der Kloot, Ph.D., associate professor of zoology, Cornell University, will become chairman of the department of pharmacology at New York University College of Medicine at the close of the academic year (June 1958). Prior to his appointment at Cornell in 1956 he was an instructor in biology at Harvard University, Boston. Dr. Van Der Kloot has been a fellow of the Lalor Foundation and of the National Research Council. He is a member of the American Society of Zoologists, the Society for Experimental Biology, and the Association for the Study of Animal Behaviour.

OHIO

Annual State Meeting in Cincinnati.—The annual meeting of the Ohio State Medical Association will be held April 15-17 at the Netherland Hilton Hotel, Cincinnati. The symposium on Fractures to be presented at the general session April 15, will be moderated by Dr. Edgar C. Baker, Youngstown. The following panel discussions are planned:

Modern Approach to the Problems of Tonsil and Adenoid Surgery, moderated by Dr. Richard H. Stahl, Cuyahoga Falls.
Prevention and Treatment of Abortions; Dr. Arthur G. King, Cincinnati.
Respiratory Distress of the Newborn; Dr. Benjamin H. Landing, Cincinnati.
Diagnosis and Management of Diseases of the Liver and Extrahepatic Biliary System; Dr. Stanley O. Hoerr, Cleveland.

Physical and Psychiatric Aspects of Rehabilitation; Dr. W. Donald Ross, Cincinnati.
Involuntary Movement and Its Surgical Treatment, Dr. Curwood R. Hunter, Cincinnati.

Dr. F. J. L. Blasingame, Chicago, general manager, A. M. A., will present "It's Your AMA" April 16, and Dr. David B. Allman, president, A. M. A., will present an address at the annual banquet, April 16. Scientific and technical exhibits, alumni meetings, and a workshop on medical writing, conducted by Dr. Jonathan Forman, editor *Ohio State Medical Journal,* are planned. For information write the Ohio State Medical Association, 79 E. State St., Room 1005, Columbus 15, Ohio.

OKLAHOMA

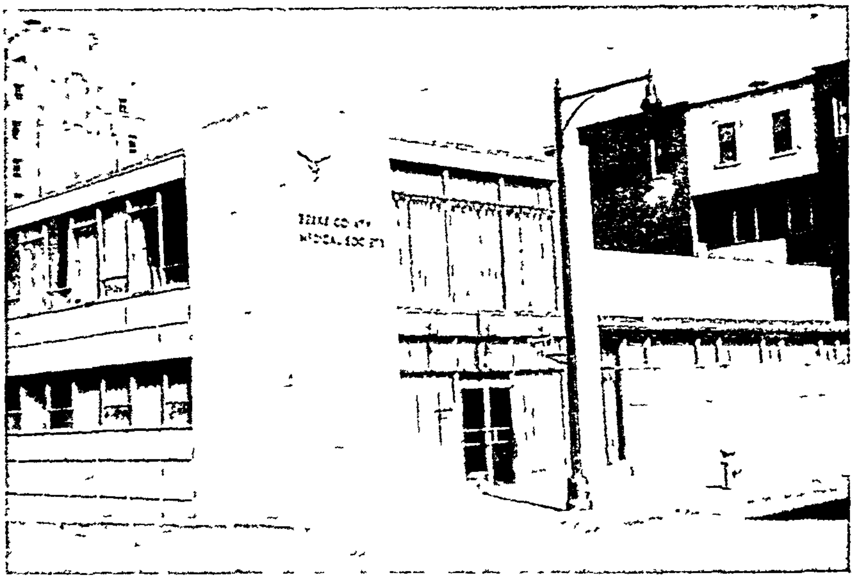
Increase in Rabies.—The laboratories at the Oklahoma State Department of Health have released statistics showing 46 animal heads positive in 1957 as compared with 7 heads in 1956 and 5 in 1955. The 1957 figures show 19 dogs, 6 cattle, 1 pig, 5 cats, 12 skunks, 1 bat, 1 mouse, and 1 squirrel as the animals involved. The laboratories examined a total of 749 specimens, 667 of which were negative and 36 of which were unsatisfactory for examination. The 12 skunks with rabies are the first to be reported since 1952, when 5 were reported. The first case of a person being bitten by a rabid bat in the state occurred in June in Enid when an 8-year-old boy was attacked. He was given the complete series of anti-rabies inoculations and recovered. This was the third report of rabid bats in the state, two having been found in 1956 through the joint bat rabies research project carried out by the state laboratories and Oklahoma University under a U. S. Public Health grant.

OREGON

Alumni Association Meeting.—The 43rd annual meeting of the Alumni Association of the University of Oregon Medical School will be held April 16-18 in the Medical School auditorium. Dr. Morton J. Goodman, president of the Association and assistant clinical professor of medicine, has named Dr. Faulkner A. Short, a vice-president of the alumni organization and clinical associate in orthopedic surgery, as program chairman. The following Sommer Memorial Lectures will appear at the spring meeting. Dr. Lowell A. Rantz, professor of medicine, Stanford; Dr. John A. Stallworthy, Oxford, England; and Dr. Alan R. Moritz, professor of pathology, Western Reserve University, Cleveland. The General Practice group will provide category I postgraduate credit for the meeting based on the number of hours of formal lectures. Fraternity reunions will be held the evening of April 15; the Sommer lecture banquet will take place the night of April 16; the Alumni Association annual banquet will be held April 17; and class reunions are scheduled for the evening of April 18

PENNSYLVANIA

New County Society Building.—The Berks County Medical Society dedicated its new Medical Hall on Oct. 30. Built to replace previous headquarters which were deeded to the society as a gift in 1912, the new building is the result of 10 years of planning by the Building Committee, under the aegis of Dr. Charles K. Kistler. The structure includes a "well-lighted and ventilated meeting room with the most advanced audio-visual equipment," board room, secretary's office, lobby, cloak room, and kitchen. A suite for the Medical-Dental Bureau of Berks County is also provided, complete with a telephone switchboard to accommodate around-the-clock emergency call service. The dedication speaker was Dr. John W. Shirer, president, Pennsylvania State Medical Society.



The new Medical Hall of the Berks County Medical Society

Philadelphia

University News.—The Mu Chapter of the Phi Delta Epsilon Fraternity at the Jefferson Medical College will hold its annual lectureship April 18, 8:30 p. m., in McClellan Hall. The guest speaker will be Dr. Denton A. Cooley, of the Baylor University School of Medicine, Houston, Texas, who will discuss "Emergencies Arising During Surgery to the Heart and Great Vessels."

TENNESSEE

Dr. Christie to Receive Phillips Award.—Dr. Amos Christie, head, pediatrics department, Vanderbilt University School of Medicine, Nashville, has been selected to receive the John Phillips Memorial Award at the convention of the American College of Physicians in Atlantic City, April 30. The award is named in honor of one of the pioneers in the development of internal medicine as a specialty and one of the founders of the college. Dr. Christie was selected for his research work concerning histoplasmosis. He came to Vanderbilt in 1943, after wartime service as assistant director of the medical and health service of the American Red Cross.

TEXAS

Award for Research in Psoriasis.—The department of dermatology, Baylor University College of Medicine, Houston, Texas, announces that Drs. J. M. Paschoud, von B. Schmidli, and Walter Keller have been selected as recipients of the $1,000 award for research in psoriasis. The award is given for their work published in the *Archiv fur Klinische und Experimentelle Dermatologica* and in *Dermatologica*. This award was established as a 10-year program for research in psoriasis by Carol and Henry J. N. Taub in honor of their grandparents, Mr. and Mrs. J. N. Taub.

WEST VIRGINIA

Surgeons Meet in White Sulphur Springs.—The West Virginia Chapter of the American College of Surgeons will be held at The Greenbrier, White Sulphur Springs, April 18-19, under the presidency of Dr. Charles D. Hershey, of Wheeling. The following papers will be presented by out-of-state speakers:

Pancreatic and Periampullary Tumors, Dr. Kenneth W. Warren, Boston.
Surgical Considerations in Pancreatic Disease, Dr. Warren.
Emphasis on Trauma, Dr. Hubbard P. Saunders, Chicago.
Vagaries of Abdominal Trauma, Dr. Robert J. Coffey, Washington, D. C.
The Prevention and Repair of Surgical Trauma, Dr. Warren.

Members of the state chapter of the American Academy of General Practice are invited. Dr. Kenneth G. MacDonald, of Charleston, is secretary-treasurer of the state chapter of the college.

GENERAL

Urologists Meeting in New Orleans.—The 53rd annual meeting of the American Urological Association, Inc., will be held April 28-May 1 at the Roosevelt Hotel, New Orleans. Over 30 papers are scheduled for presentation, including "Modern Concepts of Urologic Endocrinology," by Dr. Matthew M. Steiner, Chicago.The president's address, "Office Urology," will be given by Dr. William J. Baker, Chicago. Two panel discussions are planned: Determination of Sex and What to Do About It, moderated by Dr. Raymond G. Bunge, Iowa City, and Medicolegal Aspects of Urology, moderated by Dr. Hubert W. Smith, Austin, Texas. The Ramon Guiteras Lecture, "An Evaluation of Cystectomy in Urologic Surgery," will be given by Dr. Charles C Higgins, Cleveland. For information write Dr. Samuel L. Raines, Secretary, American Urological Association, Inc., 188 S. Bellevue Blvd., Memphis 4, Tenn.

Cancer Research Meeting in Philadelphia.—The 49th annual meeting of the American Association for Cancer Research, Inc., will be held April 11-13 at the Sheraton Hotel, Philadelphia. The presidential address, "A Meeting of Ways in Cancer Research," will be given April 12 by Dr. Jacob Furth, of Boston. A symposium on "Recent Contributions of Tissue Culture to Cancer Research" will be held jointly with members of the Tissue Culture Association and will include the following:

Tissue Culture in Cancer Chemotherapy Screening, Erich Hirschberg, Ph.D., New York City.
Interactions Between Normal and Tumor Cells, Dr. Joseph Leighton, Pittsburgh.
Energy Costs of Growth in Continuous Metozoan Cell Cultures, Samuel Graff, Ph.D., New York City.
Nutritional Growth and Amethopterin-Resistance Characteristics of Leukemic Clones, Glenn A. Fischer, Ph.D., New Haven, Conn.
Clonal Studies on Normal Cells and on Their Neoplastic Transformation in Tissue Culture, Katherine K. Sanford, Ph.D., Bethesda, Md.
In Vitro Studies on Neoplastic Viruses, Dr. Frederik B. Bang, Baltimore.

Over 250 papers are scheduled for presentation not including those read by title. The business meeting will be held April 11 and the reception, April 12. For information write The American Association for Cancer Research, Inc., 7701 Burholme Ave., Philadelphia 11.

Allergists Meeting in Atlantic City.—The 14th annual congress of the American College of Allergists will be held April 23-25 at the Shelburne, Atlantic City, N. J. An instructional course will be conducted April 20-22. The presidential address will be presented by Dr. Orval R. Withers the afternoon of April 24. Sectional meetings on allergy of the nervous system, technology, pediatric allergy, dermatologic allergy, psychosomatic medicine, ophtho-otolaryngology, and mold allergy will be held April 25. A workshop on medical writing will be conducted with Dr. Jonathan Forman as chairman. The Bela Shick and von Pirquet awards will be presented April 24, following an address, "The Nature of Allergy," presented by Dr. William B. Sherman, president, American Academy of Allergy. Motion pictures and scientific exhibits are planned. For information write the American College of Allergy, 2049 Broadway, Boulder, Colo.

University Programs in Radiation Biology.—Training and research programs in radiobiology for the preparation of public health experts equipped to guard civilian populations against the health hazards of nuclear radiation will be supported through grants from the Rockefeller Foundation. Harvard University, the Johns Hopkins University, and the University of Pittsburgh have each received a $500,000 grant Harvard University's School of Public Health has been conducting research since 1947 on radiation problems affecting industry and the public. Instruction in the environmental aspects of radiation started in 1950 as part of the industrial hygiene engineering course and has since expanded in cooperation with several departments of the university. At Johns Hopkins University, the Thomas C. Jenkins Department of Biophysics, the School of Medicine, and the School of Hygiene and Public Health will coordinate and intensify their programs in radiation and radiobiology The University of Pittsburgh Graduate School of Public Health, through its department of occupational health, has a program of research and teaching which emphasizes the biological effects of ionizing radiation, including the health problems involved in the design and operation of nuclear reactors

International Meeting on Internal Medicine.—The Fifth International Congress of Internal Medicine will be held April 24-26 in Philadelphia with headquarters at the new Sheraton Hotel. Participants in the opening exercises will be Dr. T. Grier Miller, president of the congress, Dr. Richard A. Kern, president, American College of Physicians, Mayor Richardson Dilworth, of Philadelphia, and Sir Russel Brain, president, International Society of Internal Medicine, sponsor of the congress. The scientific program will include 81 foreign speakers representing 27 other nations, among which are the Soviet Union, Czechoslovakia, Hungary, Rumania, and Poland. The program includes the following panel discussions and moderators

Anticoagulant Therapy, Dr. Irving S Wright, professor of clinical medicine, Cornell University Medical College, New York City

Synthetic Steroid Compounds Used in Rheumatoid Arthritis, Dr. Philip S. Hench, professor of medicine, University of Minnesota, Rochester

Rehabilitation, Dr. Svend V Clemmesen, chief physician, department of physical medicine and rheumatology, Municipal Hospital, Copenhagen, Denmark

Non-professional activities include a symphony concert April 24, the congress banquet April 25, and a luncheon at the University of Pennsylvania Museum April 26. A special ladies program is arranged. Information and registration forms may be obtained from Mr. E. R. Loveland, Secretary-General, Fifth International Congress of Internal Medicine, 4200 Pine St, Philadelphia 4

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United State, its territories and possessions in the weeks ended as indicated:

	March 8, 1958		March 9 1957
Area	Paralytic Type	Total Cases Reported	Total
New England States			
Maine .			..
New Hampshire		.	..
Vermont .	.	..	..
Massachusetts			1
Rhode Island			.
Connecticut			..
Middle Atlantic States			
New York			2
New Jersey	.	..	..
Pennsylvania		.	..
East North Central States			
Ohio		2	..
Indiana		.	..
Illinois		.	.
Michigan		1	1
Wisconsin	.	..	..
West North Central States			
Minnesota	.	..	..
Iowa		..	..
Missouri			..
North Dakota	1	1	.
South Dakota		..	.
Nebraska	.	.	1
Kansas			..
South Atlantic States			
Delaware	1	1	..
Maryland		.	..
District of Columbia			..
Virginia		.	.
West Virginia			1
North Carolina		1	1
South Carolina			..
Georgia	.	..	.
Florida	›	2	..
East South Central States			
Kentucky		..	.
Tennessee	.	.	
Alabama		..	.
Mississippi		.	2
West South Central States			
Arkansas	1	1	›
Louisiana			4
Oklahoma		1	1
Texas	'	4	7
Mountain States			
Montana			..
Idaho			..
Wyoming			
Colorado		..	.
New Mexico		.	.
Arizona			1
Utah		.	1
Nevada			
Pacific States			
Washington		1	..
Oregon		1	
California	2	3	7
Territories and Possessions			
Alaska		.	..
Hawaii			.
Puerto Rico	1	1	
Total	11	20	33

Flying Physicians to Meet in Phoenix.—The annual spring round-up of the Flying Physicians Association will be held April 23-27 with headquarters at the Hotel Valley Ho, Phoenix, Ariz. Dr. Rafael

Samper, of Bogota, Columbia, will present "A Story of Medicine and Flying in Columbia" April 26. The program includes the following:

Physical Fitness in Flying, Dr. James H. Britton, Pasadena, Calif.
Space Travel, Dr. Francis B. Quinn Jr., Los Angeles.
Difficulties in the Interpretation of Pain in the Chest, Dr. Charles H. Scheifley, Rochester, Minn.
Aviation of Tomorrow, Dr. Toby Freedman, Los Angeles.
Trauma, Dr. Roger S. Johnson, Excelsior, Minn.
Crash Deceleration in Private Aircraft Accidents, Dr. Paul T. Haltom Jr., Artesia, Calif.

For information write Dr. Harry Dan Vickers, 25 Jackson St., Little Falls, N. Y.

Annual Meeting of Physicians and Surgeons.—The 15th annual meeting of the Association of American Physicians and Surgeons will be held April 10-12 at the Hotel Mark Hopkins, San Francisco, under the presidency of Dr. Cyrus W. Anderson. The program includes the following:

Twentieth Century Trojan Horse, Dr. Charles W. Pavey, *Columbus, Ohio.*
Doles for Doctors, Dr. James L. Doenges, Anderson, Ind.
Socialized Medicine by Way of Social Security (Forand *Bill*), Dr. George J. Hess, Bunker Hill, Ill.
Eventual and Inevitable Folly of "Bricks and Mortar," Dr. Lewis A. Alesen, Los Angeles.
Missiles or Pensions, Dr. Louis M. Orr, Orlando, Fla.
Communist Satellites and Common Sense, Dr. Charles D. Kerr, Houston, Texas.

General Bonner F. Fellers, U. S. Army, retired, will be the banquet speaker April 11. For information write the Association of American Physicians and Surgeons, 185 N. Wabash Ave., Chicago 1.

EXAMINATIONS AND LICENSURE

MEDICAL SPECIALTY BOARDS

American Board of Anesthesiology: *Written.* Various locations, July 17, 1959. Final date for filing application is January 17, 1959. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford.

American Board of Dermatology: *Written. Several Cities,* June 30. *Oral. Detroit,* Oct. 17-19. Final date for filing all applications is April 1. Sec., Dr. Beatrice Maher Kesten, *One Haven Ave., New York 32.*

American Board of Internal Medicine: *Written.* Oct. 20, 1958. *Oral.* Philadelphia, April 23-26; San Francisco, June 18-21; Chicago, Oct. 13-16. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

American Board of Neurological Surgery: Examination given twice annually, in the spring and fall. In order to be eligible a candidate must have his application filed at least six months before the examination time. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, St. Louis 10.

American Board of Obstetrics and Gynecology: *Part II.* Chicago, May 7-17. Final date for filing application was *September 1. Sec., Dr.* Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Written,* Jan. 26, 1959. *Final* date for filing application is July 1, 1958. *Clinical.* San Francisco, June 17-21; Chicago, Oct. 17-22. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, *Portland,* Maine.

American Board of Orthopaedic Surgery: *Part II.* Chicago, Jan. 21-23, 1959. Sec., Dr. *Sam W. Banks, 116 South* Michigan Avenue, Chicago 3.

American Board of Otolaryngology: *Oral.* Chicago, Oct. 6-9. Final date for filing application is March. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: San Francisco, June 30-*July 2. Final date for filing application is* May 1. Sec., Dr. Edward *B.* Smith, Indiana University Medical Center, 1042-1232 W. Michigan St., Indianapolis 7.

American Board of Pediatrics: *Oral.* Atlantic City, May 3-5; Cincinnati, June 13-15; Chicago, Oct. 24-26 and New York, Dec. 5-7. Sec., Dr. John McK. Mitchell, 6 Cushman *Road, Rosemont, Pa.*

American Board of Physical Medicine and Rehabilitation: *Oral and Written.* Peoria, Ill., June 20-21. Final date for filing application was Feb. 1. Sec., Dr. Earl C. Elkins, 200 First St., S. W., Rochester, Minn.

American Board of Plastic Surgery: *Oral and Written.* Galveston, Texas, May 18-20. Corresponding Secretary, Miss Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

American Board of Preventive Medicine: *Occupational Medicine,* April 18-20. Final date for filing application was Jan. 30. *Public Health* on a Regional Basis, April. Final date for filing application is Jan. 30. Sec., Dr. Tom F. Whayne, 3438 Walnut St., Philadelphia 4.

American Board of Proctology: *Oral and Written, Parts I and II. September 1958. Final date* for filing application is March 15. Sec., Dr. Stuart T. Ross, 520 Franklin Ave., Garden City, N. Y.

American Board of Psychiatry and Neurology: New York City, Dec. 15-16. Training credit for full time psychiatric and/or neurologic assignment in unapproved military programs or services between the dates of Jan. 1, 1950 and Jan. 1, 1954 will be terminated on Jan. 1, 1959. Sec., Dr. David A. Boyd, 102-110 Second Ave. S. W., Rochester, Minn.

American Board of Radiology: *Special Examination in Nuclear Medicine for Diplomates in Radiology or Therapeutic Radiology,* Chicago, May 17. Deadline for filing *application was* Feb. 1. *Regular Examination in Radiology,* Chicago, May 19-23. Final date for filing application was Jan. 1. *Regular Examination in* Radiology. Washington, D. C., Dec. 8-12. Final date for filing application is July 1. Sec., Dr. H. Dabney Kerr, Kahler Hotel Bldg., Rochester, Minn.

American Board of Surgery: *Oral (Part II).* Chicago, May 12-13; Los Angeles, June 16-17; Portland, June 20-21. Written examinations (Part I) will be held at various centers in the United States, Canada, Hawaii, Puerto Rico, and certain military centers abroad on December 3. The date of the Fall examination in *Part I* has been changed from the last Wednesday of October as announced in its current Booklet of Information to December 3, 1958 Thereafter, examinations in Part I will be held once annually, on the first Wednesday of December. The closing date for filing applications will be August 1. Sec., Dr. John B. Flick, 225 So. 15th St., Philadelphia 2.

Board of Thoracic Surgery: *Oral.* Boston, May 12-13. Final date for filing application was Decmber 1. The fall written examination will be given in September 1958 and closing date for registration is July 1. Registration for the fall oral examination closes July 1.

DEATHS

Bengs, Hilding Arvid ⊕ Somerset, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1930; certified by the National Board of Medical Examiners; member of the American Psychiatric Association; served as director of the Bureau of Mental Health in the State Welfare Department and as the first state commissioner of mental health; formerly secretary of the Warren County (Pa.) Medical Society; for many years associated with the Warren (Pa.) State Hospital; superintendent of the Somerset State Hospital; died Jan. 29, aged 53.

Biddle, Asher Cadden ⊕ Mansfield, Ohio; College of Physicians and Surgeons, Baltimore, 1904; staff physician for the Richland County Health Department; on the staff of the Mansfield General Hospital; died Jan. 13, aged 84, of coronary disease.

Billick, Eugene Wycoff, Colonel, U. S. Army, retired, Arlington, Va.; University of Pittsburgh School of Medicine, 1925; service member of the American Medical Association; entered the medical corps of the U. S. Army as a first lieutenant in 1926; retired Aug. 31, 1956; chief surgeon of the Africa-Middle East Theater during World War II and later surgeon of the Fifth Army; held the Legion of Merit and the United States of America Typhus Commission medals; member of the Sigma Alpha Epsilon and Nu Sigma Nu; died in the Walter Reed Army Hospital, Washington, D. C., Jan. 26, aged 61, of lobar pneumonia with tracheobronchitis.

Bitler, Clyde Clermont, New Castle, Ind.; Indiana University School of Medicine, Indianapolis, 1912; member of the Indiana State Medical Association; veteran of World War I; served two terms on the New Castle City Council; elected to the school board, and served two terms as city health officer; formerly assistant superintendent of the Southeastern Hospital for Insane in Madison; associated with the Henry County Hospital and the Clinic Hospital, where he died Jan. 14, aged 70, of cerebral hemorrhage.

Blaine, Walter C. ⊕ Tuscola, Ill.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; formerly vice-president of the Illinois State Medical Society; member of the House of Delegates of the American Medical Association in 1919; served on the selective service boards during World Wars I and II; physician for the Chicago and Eastern Illinois Railroad; on the staff of the Jarman Memorial Hospital, where he died Jan. 28, aged 89, of chronic nephritis and chronic myocarditis.

Boethel, Nicholas Charles, Hallettsville, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1901; veteran of World War I; served as a member of the Hallettsville Independent School District Board of Education for many years; formerly on the staff of the Renger Memorial Hospital, where he died Nov. 16, aged 78, of coronary thrombosis.

Bourdon, Evan Covington ⊕ Oakland, Calif.; Baylor University College of Medicine, Dallas, 1937; veteran of World War II; died in the Kaiser Foundation Hospital, Vallejo, Jan. 9, aged 49, of generalized carcinomatosis and carcinoma of the right colon.

Brady, Edwin Herms ⊕ Auburn, Calif.; Creighton University School of Medicine, Omaha, 1941; member of the American College of Chest Physicians and the American Trudeau Society; associated with the DeWitt State Hospital; veteran of World War II; died Jan. 8, aged 57.

Bronfenbrenner, Alice, St. Louis; Washington University School of Medicine, St. Louis, 1950; died in the University of Minnesota Hospital in Minneapolis Jan. 16, aged 31, of renal insufficiency and chronic glomerulonephritis.

Brown, John Edward ⊕ Perry, Mo.; Hospital College of Medicine, Louisville, Ky., 1895; associated with St. Elizabeth's Hospital and Levering Hospital, Hannibal, where he died Jan. 19, aged 91, of cerebral hemorrhage.

Burke, John Patrick Jr. ⊕ California, Mo.; St. Louis University School of Medicine, 1906; veteran of World War I; died in Albuquerque, N. M., Jan. 1, aged 77, of pneumonia.

Bury, Roy Wesley ⊕ Faust, N. Y.; University of Buffalo School of Medicine, 1913; veteran of World War I; on the staff of the Mercy General Hospital in Tupper Lake; died in Sarasota (Fla.) Memorial Hospital, Dec. 29, aged 67, of cerebral hemorrhage and arteriosclerosis.

Campbell, George Malcolm ⊕ South Gate, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1935; member of the American Academy of General Practice; associated with Mission Hospital in Huntington Park and St. Francis Hospital; died in the Glendale (Calif.) Sanitarium and Hospital Jan. 18, aged 47.

⊕ Indicates Member of the American Medical Association.

War II; associated with Crouse-Irving Hospital; died in the Veterans Administration Hospital Jan. 5, aged 59, of cancer.

Harding, George H. Jr. ⊕ Nashville, Tenn.; University of Nashville Medical Department, 1907; died in the Baptist Hospital Jan. 10, aged 74.

Harkness, Robert Bruce ⊕ Kennett Square, Pa.; Memphis (Tenn.) Hospital Medical College, 1899; member of the Michigan State Medical Society; fellow of the American College of Physicians; veteran of World War I; formerly practiced in Hastings, Mich., serving as director of the Barry County Health Department; formerly member and in 1939 elected president of the State Council of Health of Michigan; at one time on the staff of the Kellogg Foundation in Battle Creek, Mich.; died Jan. 21, aged 82.

Harllee, Chauncey Mitchell Depew ⊕ Philadelphia; Howard University College of Medicine, Washington, D. C., 1918; served on the staff of the Mercy-Douglass Hospital; died Jan. 17, aged 64, of heart disease.

Harnagel, Edward John ⊕ Des Moines, Iowa; Jefferson Medical College of Philadelphia, 1910; fellow of the American College of Surgeons; past-president of the Polk County Medical Society; veteran of World War I; on the staffs of the Iowa Methodist, Iowa Lutheran, and Mercy hospitals; died Jan. 7, aged 76, of cancer.

Harris, Charles Houston ⊕ Fort Worth, Texas; born in Alvarado, July 11, 1869; St. Louis College of Physicians and Surgeons, 1899; in 1906 member of the House of Delegates of the American Medical Association; fellow of the American College of Surgeons; past-president of the Tarrant County Medical Society; at one time vice-president of the Texas Medical Association; served as a trustee of Texas Christian University, where he received an honorary degree; held honorary degrees from Southwestern University at Georgetown and Texas Wesleyan College; associated with the Harris Hospital, where he died Jan. 20, aged 88, of carcinoma of the prostate.

Harvey, Basil Coleman Hyatt, Chicago; University of Toronto Faculty of Medicine, Toronto, Ontario, Canada, 1898; professor emeritus of anatomy at University of Chicago, The School of Medicine, where he was at one time dean of students; past-vice-president of the Institute of Medicine of Chicago and past-treasurer of the Association of American Medical Colleges; served with the American Expeditionary Force in France during World War I; died in the Albert Merritt Billings Hospital Feb. 15, aged 83, of neoplasm of pancreas.

Heger, Frank Ferdinand ⊕ San Antonio, Texas; St. Louis University School of Medicine, 1928; veteran of World War II; associated with Santa Rosa and Nix hospitals; died Jan. 19, aged 59, of coronary occlusion.

Helm, Harold McMurdo ⊕ Rockton, Ill.; Rush Medical College, Chicago, 1914; member of the State Medical Society of Wisconsin; formerly practiced in Beloit, Wis., where he was on the staff of the Beloit Hospital and where he died Jan. 3, aged 69, of cerebral hemorrhage.

Hetherington, Clark Edward ⊕ Cincinnati; Chicago Homeopathic Medical College, 1901; died in the Christ Hospital, Cincinnati, Jan. 10, aged 83.

Hodnett, William Selden, Richmond, Va.; University College of Medicine, Richmond, 1910; on the staff of the Grace Hospital, where he died Jan. 6, aged 71, of uremia.

Hoecker, Wade Lee, Galveston, Texas; University of Texas School of Medicine, Galveston, 1909; veteran of World War I; formerly city health officer; associated with St. Mary's Infirmary; died Jan. 4, aged 71, of cerebrovascular accident.

Hoffman, Gideon H. ⊕ Kewanee, Ill.; Western Reserve University Medical Department, Cleveland, 1898; associated with St. Francis Hospital and later Kewanee Public Hospital, where he died Jan. 25, aged 86, of cerebral thrombosis.

Holt, Thomas Tallman ⊕ Wichita, Kan.; University Medical College of Kansas City, Mo., 1900; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians, of which he was an ex-vice-president and ex-governor; died in St. Francis Hospital Jan. 18, aged 81, of cerebral vascular accident.

Hooper, Rector Clay ⊕ Jonesboro, Ark.; University of Arkansas School of Medicine, Little Rock, 1939; specialist certified by the American Board of Urology; fellow of the American College of Surgeons; past-president of the Craighead-Poinsett Counties Medical Society; member of the Jonesboro Chamber of Commerce; chief of medical staff, St. Bernard's Hospital, where he died Jan. 15, aged 46, of coronary thrombosis.

Horsfall, William ⊕ Coos Bay, Ore.; Cooper Medical College, San Francisco, 1892; served as president of the Coos-Curry Counties Medical Society; once county coroner; in 1939 elected as First Citizen of Coos Bay; died Jan. 17, aged 91, of coronary disease.

Houchins, Edward Kenna, Las Vegas, N. M.; Chicago College of Medicine and Surgery, 1916; died in Charleston, W. Va., Jan. 3, aged 73, of arteriosclerosis and cerebral hemorrhage.

Ingram, Clarence Hogue Jr. ⊕ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1929; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; president-elect of the Allegheny County Medical Society; past-president of the Obstetrical Society of Pittsburgh; associated with Western Pennsylvania Hospital, where he died Jan. 22, aged 53.

Irwin, James Walter, Eaton Rapids, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; died in the Stimson Community Hospital Jan. 3, aged 89.

Johnson, John Frank ⊕ Macon, Ga.; Emory University School of Medicine, Atlanta, 1940; interned at the Grady Hospital in Atlanta; served a residency at the Carraway Methodist Hospital in Birmingham, Ala.; veteran of World War II; associated with the Macon Hospital; died Jan. 12, aged 42, of coronary thrombosis.

Kahn, Isidore Stanley ⊕ San Antonio, Texas; Harvard Medical School, Boston, 1904; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; veteran of World War I; associated with Nix Memorial and Santa Rosa hospitals; died Jan. 27, aged 78.

Lawler, Charles Arthur, Salamanca, N. Y.; University of Buffalo School of Medicine, 1911; an associate member of the American Medical Association; served as president of the Cattaraugus County Medical Society; veteran of World War I; died in the Buffalo (N. Y.) General Hospital Dec. 8, aged 70.

Le Valley, Thomas Alexander ⊕ Van Nuys, Calif.; Tulane University School of Medicine, New Orleans, 1936; assistant professor of urology at the College of Medical Evangelists, Loma Linda and Los Angeles; specialist certified by the American Board of Urology; fellow of the American College of Surgeons; associated with St. Joseph Hospital in Burbank, Physicians and Surgeons Hospital in Glendale, and the Los Angeles County General Hospital; died Jan. 1, aged 51.

Lewis, Frank Clark, New York City; University of Vermont College of Medicine, Burlington, 1902; died Jan. 1, aged 80, of bronchopneumonia, hypertensive heart disease, and cerebral arteriosclerosis.

Lorber, Herman, New York City; Columbia University College of Physicians and Surgeons, New York City, 1903; specialist certified by the American Board of Obstetrics and Gynecology; an associate member of the American Medical Association; associated with the Beth Israel Hospital; died in the Temple University Hospital, Philadelphia, Jan. 30, aged 78.

Luckie, Kenneth Earl, Selma, Ala.; Tulane University School of Medicine, New Orleans, 1927; member of the Medical Association of the State of Alabama; fellow of the Southeastern Surgical Congress and the American College of Surgeons; past-president of the Dallas County Medical Society; district surgeon, Southern Railway; associated with Selma Baptist Hospital, where he died Jan. 1, aged 54, of circulatory collapse.

Lyon, Ervin F., Jr. ⊕ San Antonio, Texas; Baylor University College of Medicine, Dallas, 1931; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; veteran of World War II; associated with Baptist Memorial Hospital, where he died Jan. 2, aged 49, of cerebral hemorrhage.

McAtee, John Donald, Tuscaloosa, Ala.; Rush Medical College, Chicago, 1937; member of the American Psychiatric Association; veteran of World War II; died in Evanston, Ill., Jan. 26, aged 45, of coronary occlusion.

McClellan, William Jennings, Houston, Texas; Memphis (Tenn.) Hospital Medical College, 1889; died Jan. 15, aged 93, following a fracture of the hip.

McCracken, Joseph Hill Jr. ⊕ Dallas, Texas; Baylor University College of Medicine, Dallas, 1926; formerly on the faculty of his alma mater and the Southwestern Medical School of the University of Texas; died Jan. 18, aged 57.

McDermott, Edward Leo, Captain, U. S. Navy, retired, Rochester, N. Y.; Albany (N. Y.) Medical College, 1916; service member of the American Medical Association; entered the U. S. Navy in 1919; retired Jan. 1, 1944; died in West Palm Beach, Fla., Jan. 12, aged 70, of cerebral thrombosis.

McGuire, Charles A., Atlantic City, N. J.; Howard University College of Medicine, Washington, D. C., 1909; died in Paulsboro Dec. 27, aged 84.

McKenzie, Prentiss, Evanston, Ill.; Jenner Medical College, Chicago, 1916; died Feb. 1, aged 85.

McNulty, Edward Tinney, Brooklyn; Columbia University College of Physicians and Surgeons, New York City, 1906; died Jan. 19, aged 76, of arteriosclerotic heart disease.

Marshall, William J. ⊕ Geneva, Pa.; Eclectic Medical Institute, Cincinnati, 1905; died in the Hamot Hospital, Erie, Jan. 8, aged 85, of injuries received in an automobile accident.

Matheson, Elizabeth Beckett, San Antonio, Texas; Trinity Medical College, Toronto, Ontario, Canada, 1898; Manitoba Medical College, Winnipeg, Manitoba, Canada, 1904; for many years a medical missionary in Onion Lake, Saskatchewan; for 23 years assistant health inspector for public schools in Winnipeg, Canada; died Jan. 15, aged 92, of cerebral thrombosis.

Mattill, Peter Milton ⊕ Oak Terrace, Minn.; born in 1887; Rush Medical College, Chicago, 1919; specialist certified by the American Board of Internal Medicine; member of the American Trudeau Society and past-president of the Minnesota Chapter; fellow of the American College of Physicians; clinical assistant of medicine at the University of Minnesota Medical School in Minneapolis from 1926 to 1946 and later instructor at the school of nursing; served as assistant superintendent and associate medical director of the Glen Lake Sanatorium; died in Northwestern Hospital, Minneapolis, Jan. 12, aged 70, of mesenchymoma retroperitoneal with extension to the spinal dura.

Meadows, Russell Jr. ⊕ Indio, Calif.; Northwestern University Medical School, Chicago, 1945; veteran of World War II; interned at Naval Hospital in Long Beach, Calif.; served a residency at the Alexian Brothers Hospital in Chicago, Veterans Administration Hospital in Hines, Ill., and the Warren (Pa.) State Hospital, where he was for five years clinical director; served on the staff of the Veterans Administration Hospital in San Fernando; affiliated with Coachilla Valley Hospital; found dead Jan. 29, aged 37.

Messmore, John Lindsey ⊕ Masontown, Pa.; University of Maryland School of Medicine, Baltimore, 1909; past-president of the Fayette County Medical Society; veteran of World War I; died Jan. 3, aged 70, of cerebral hemorrhage.

Meyer, William Henry ⊕ Poughkeepsie, N. Y.; Albany (N. Y.) Medical College, 1931; certified by the National Board of Medical Examiners; fellow of the American College of Surgeons; past-president of the Mid Hudson Surgical Society and the Poughkeepsie Rotary; past chief of staff and chief of the surgical division, Vassar Brothers Hospital, where he died Jan. 12, aged 52, of cerebrovascular accident.

Molt, William Frank ⊕ Indianapolis; born Oct. 18, 1876; Physio-Medical College of Indiana, Indianapolis, 1897; specialist certified by the American Board of Otolaryngology; clinical professor emeritus of broncho-esophagology at the Indiana University School of Medicine; life member of the American Academy of Ophthalmology and Otolaryngology; senior member of the American Broncho-Esophagological Association; on the staff of the Indiana University Medical Center, Indianapolis General Hospital, Methodist Hospital, and St. Vincent's Hospital; died Jan. 12, aged 81, of arteriosclerosis.

Moore, John Terrell ⊕ Tampa, Fla.; Emory University School of Medicine, Atlanta, 1916; veteran of World War I; served on the staffs of the Tampa Municipal Hospital, St. Joseph's Hospital, and Centro Asturiano Hospital; died Jan. 11, aged 74, of heart disease.

Mulkey, Young J. ⊕ Fort Worth, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1909; Medico-Chirurgical College of Philadelphia, 1912; member of the American Academy of General Practice; veteran of World War I; died Jan. 27, aged 70.

Mundell, Walter Newton ⊕ Hutchinson, Kan.; University of Kansas School of Medicine, Kansas City, 1914; veteran of World War I; associated with the Grace Hospital, where he died Jan. 2, aged 77, of coronary thrombosis.

Munson, Edwin Sterling, Yonkers, N. Y.; New York Homeopathic Medical College and Hospital, New York City, 1894; emeritus professor of ophthalmology at the New York Medical College, Flower and Fifth Avenue Hospitals; fellow of the American College of Surgeons; died Feb. 2, aged 87.

Nagel, Sigmund, New York City; Medizinische Fakultät der Universität, Vienna, Austria, 1922; member of the Medical Society of the State of New York and the American Society of Anesthesiologists; associated with the Montefiore Hospital; died Nov. 28, aged 64.

Nealon, William Francis ⊕ Schenectady, N. Y.; Albany (N. Y.) Medical College, 1915; past-president of the Schenectady County Medical Society; member of the American Academy of General Practice; surgeon in the police department of Schenectady; veteran of World War I; associated with the Ellis and St. Clare's hospitals; died Jan. 3, aged 69, of carcinoma of the transverse colon.

Nelson, Harry Charles ⊕ Santa Ana, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1916; died Jan. 9, aged 72, of acute coronary thrombosis.

Nicoll, Dorothy B., Bronxville, N. Y.; Hering Medical College, Chicago, 1904; formerly practiced in Topeka, Kan.; died in the Lawrence Hospital Jan. 21, aged 92.

Norcross, John Ruger ⊕ Chicago; Northwestern University Medical School, Chicago, 1932; associate professor of orthopedic surgery at his alma mater; specialist certified by the American Board of Orthopaedic Surgery; member of the American Orthopaedic Association, Clinical Orthopaedic Society, and the American Academy of Orthopaedic Surgeons; past-president and secretary of the Chicago Orthopaedic Society; on the staff of St. Luke's Hospital; died Feb. 16, aged 51.

O'Malley, Thomas Stanley ⊕ Milwaukee; Columbia University College of Physicians and Surgeons, New York City, 1918; member of the Industrial Medical Association; fellow of the American College of Surgeons; associated with the Milwaukee Hospital, where he died Jan. 9, aged 65, of dissecting abdominal aortic aneurysm and arteriosclerosis with cerebrovascular occlusion.

Onderdonk, Harrie Jay ⊕ Old Saybrook, Conn.; New York University Medical College, New York City, 1897; for many years medical examiner in East Hartford; served on the staffs of the Hartford and St. Francis hospitals in Hartford; died Jan. 8, aged 85, of coronary occlusion.

Ostrander, Charles Turner, Syracuse, N. Y.; Syracuse University College of Medicine, 1900; an associate member of the American Medical Association; died Jan. 30, aged 82, of coronary disease.

Ownbey, Arthur Dennis, Greensboro, N. C.; Medical College of Virginia, Richmond, 1920; formerly secretary of the Guilford County Medical Society; for many years on the staff of St. Leo's Hospital; died in the Moses H. Cone Hospital Jan. 9, aged 62.

Parker, John Lee ⊕ Snyder, Ark.; Louisville (Ky.) Medical College, 1894; died Jan. 30, aged 84.

Payn, Abbott Smith, New York City; Georgetown University School of Medicine, Washington, D. C., 1895; an associate member of the American Medical Association; died in the Bellevue Hospital Jan. 3, aged 84, of myocardial infarction and pulmonary tuberculosis.

Peaslee, Clarence Capen Jr., Portland, Maine; Yale University School of Medicine, New Haven, 1927; member of the Maine Medical Association; died Jan. 6, aged 57.

Porch, Charles Lee, Portland, Ore.; Maryland Medical College, Baltimore, 1905; died Jan. 9, aged 79, of arteriosclerotic heart disease.

Pruitt, Charles Clement, Comanche, Okla.; Eclectic Medical Institute, Cincinnati, 1899; served as mayor; died Jan. 7, aged 85.

Purinton, Charles Oscar ⊕ New Hartford, Conn.; Yale University School of Medicine, New Haven, 1900; veteran of World War I; for many years on the staff of the Veterans Administration Hospital in Sunmount, N. Y.; died in Winsted, Conn., Jan. 12, aged 83, of arteriosclerosis.

Reeves, William S., Hillsboro, Ky.; Hospital College of Medicine, Louisville, 1891; an associate member of the American Medical Association; died Jan. 23, aged 92.

Regan, Timothy Francis ⊕ Johnstown, Pa.; Tufts College Medical School, Boston, 1930; veteran of World War II; on the staff of the Mercy Hospital; died Jan. 13, aged 50, of coronary occlusion.

Reitzel, Walter Maywood ⊕ San Diego, Calif.; Kansas City (Mo.) Medical College, 1900; for many years practiced in Manhattan, Kan.; died Jan. 21, aged 79, of cancer.

Rhoads, John Peter ⊕ Tioga, Pa.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1931; veteran of World War II; died in Gettysburg Dec. 30, aged 55, of pulmonary embolism.

Richardson, Jennie May, Ilion, N. Y.; Woman's Medical College of the New York Infirmary for Women and Children, New York City, 1892; associated with the Ilion Hospital, where she died Jan. 18, aged 95, of fracture of the hip received in a fall and arteriosclerosis.

Richardson, John Breckinridge Jr., Louisville, Ky.; Louisville Medical College, 1902; an associate member of the American Medical Association; veteran of World War I; died Jan. 12, aged 81.

Roberts, Thomas Willett ⊕ Metropolis, Ill.; St. Louis College of Physicians and Surgeons, 1898; veteran of World War I; honorary president of staff, Massac Memorial Hospital; died Jan. 5, aged 85, of acute myocardial failure.

Robinson, George Wilse ⊕ Kansas City, Mo.; born in Appleton Aug. 1, 1871; Beaumont Hospital Medical College, St. Louis, 1896; specialist certified by the American Board of Psychiatry and Neurology; member of the House of Delegates of the American Medical Association in 1913 and from 1924 to 1927; member of the American Psychiatric Association; past-president of the Missouri State Medical Association; at one time professor of physiology at the University Medical College of Kansas City; served in France during World War I; formerly superintendent of the State Hospital at Nevada; founder and medical director of the Neurological Hospital, where he died Jan. 22, aged 86.

Rogers, Gaston Wilder, Lieut. Colonel, U. S. Army, retired, Chapel Hill, N. C.; Birmingham Medical College, 1911; entered the U. S. Army in 1920; veteran of World War I; retired in 1937 for disability in line of duty; service member of the American Medical Association; connected with the health department; died in a hospital at Durham Jan. 9, aged 73.

Sams, Joseph Henry ⊕ Clarion, Iowa; State University of Iowa College of Medicine, Iowa City, 1892; formerly member and president of the state board of medical examiners; served as member of the local board of health and state board of health, as member of the school board of Clarion, and as coroner of Wright County; died in the Clarion Memorial Hospital Jan. 1, aged 91, of lobar pneumonia.

Scott, Sophie Hinze ⊕ Des Moines, Iowa; Drake University Medical Department, Des Moines, 1893; past-president of the State Society of Iowa Medical Women; died Jan. 6, aged 87.

Senear, Francis Eugene ⊕ Chicago; born in Salamanca, N. Y., Nov. 5, 1889; University of Michigan Medical School, Ann Arbor, 1914; professor of dermatology emeritus at the University of Illinois College of Medicine, where he joined the faculty in 1916 as instructor in dermatology, subsequently becoming associate, assistant professor, associate professor, and from 1923 to 1955 professor and head of the department of dermatology; in 1915-1916 instructor in dermatology at his alma mater; member of the House of Delegates of the American Medical Association from 1929 to 1933 and formerly secretary and chairman of the Section on Dermatology and Syphilology; served on the Section's executive committee for two years; from 1939 to 1941 member, and from 1946 to 1951 president of the American Board of Dermatology and Syphilology; in 1935 president of the section of dermatology and syphilology of the Pan-American Medical Congress; past-president of the Chicago Dermatological Society, American Dermatological Association, and the American Academy of Dermatology; member of the Institute of Medicine of Chicago, Alpha Omega Alpha, Sigma Xi, Pi Kappa Epsilon, and Nu Sigma Nu; fellow of the American College of Physicians; corresponding member of the Danish, Austrian, and Swedish dermatological societies; honorary member of the Australian, British, Italian, and Manhattan dermatological societies; in 1957 elected president of the International Congress of Dermatology in Stockholm, Sweden; honorary vice-president of the International Congress on Dermatology in London in 1952; special consultant for the U. S. Public Health Service; associated with the Ravenswood, Presbyterian, St. Joseph's, and Illinois Central Railroad hospitals; consulting dermatologist for the Illinois Central Railroad; joint editor of "Year Book of Dermatology and Urology"; died in Winnetka, Ill., Feb. 11, aged 68, of coronary disease.

Shellhouse, Luther Harvie ⊕ Willacoochee, Ga.; Medical College of Georgia, Augusta, 1910; past-chairman of the Atkinson County Board of Health; died in the State Hospital, Milledgeville, Jan. 2, aged 74, of cerebral thrombosis.

Snell, Howard Bayard, Old Greenwich, Conn.; Long Island College Hospital, Brooklyn, 1899; an associate member of the American Medical Association; member of the Medical Society of the State of New York; formerly practiced in Brooklyn, where he was an honorary staff member at Prospect Heights Hospital; died in Clinton, Dec. 8, aged 81, of cancer.

Spaulding, Nelson Williamson Vincent, Jacksonville, Fla.; Howard University College of Medicine, Washington, D. C., 1944; served in the Korean War; died in Townsend, Ga., Dec. 22, aged 38, of pulmonary embolus.

Spivey, William E., Brownsville, Texas; Dallas (Texas) Medical College, 1903; served as health officer; died Dec. 19, aged 89, of cerebrovascular accident.

Thyson, Leo Cromwell, Captain, U. S. Navy, retired, Washington, D. C.; born in Washington, Oct. 4, 1890; George Washington University School of Medicine, Washington, 1916; appointed lieutenant (jg) in the Navy in 1917 and retired Nov. 1, 1952; among the ships to which he was assigned was the cruiser USS Pensacola; chief of medicine at the U. S. Naval Hospital at Bremerton, Wash., before being assigned to the Marine detachment at Peiping, where he was taken prisoner; one of the first American prisoners of war during World War II; awarded the Legion of Merit during July, 1946, and the Distinguished Service Medal June 19, 1950, "for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States while a prisoner of war at the Japanese prison camps near Shanghai and Fengtai, China, and at Hakodate, Japan, from Feb. 1, 1942 to Sept. 14, 1945"; service member of the American Medical Association; died Jan. 9, aged 67, of a heart attack.

Wahn, Henry, New York City; New York University Medical College, New York City, 1898; an associate member of the American Medical Association; associated with St. Francis Hospital; died in the Frances Schervier Hospital Jan. 23, aged 85, of cerebral thrombosis and arteriosclerosis.

Walker, George Leon ⊕ Wilmington, Del.; Hahnemann Medical College and Hospital of Philadelphia, 1928; veteran of World War II; served on the staffs of the Women's Hospital in Philadelphia and St. Francis Hospital; died in Bel Air, Md., Jan. 13, aged 58, of a heart attack.

White, Marion L. ⊕ Dixon, Ill.; Keokuk (Iowa) Medical College, 1894; served on the staff of the Dixon Public Hospital; died Dec. 8, aged 92, of myocardial failure and arteriosclerosis.

Williamson, Drue Baldwin, Jacksonville, Texas; University of Texas School of Medicine, Galveston, 1909; died Dec. 5, aged 81, of arthritis and gastric ulcer.

Worrell, Laurence Randolph ⊕ Norwich, N. Y.; Albany (N. Y.) Medical College, 1914; formerly practiced in Albany, where he was on the staff of St. Peter's and Albany hospitals; on the staff of the Chenango Memorial Hospital; died Jan. 14, aged 69.

FOREIGN LETTERS

AUSTRIA

Inspection of Industrial Medical Facilities.—The Austrian Chamber of Physicians has assiduously championed the cause of full-time factory and plant physicians as the best means of according the workers more comprehensive medical care than the Austrian State Social Medical Scheme and its involved bureaucracy can offer. Dr. Konrad Eberle, President of the Chamber of Physicians, invited a number of physicians and reporters to visit some of the plants in Vienna and environs to observe firsthand how efficiently the full-time factory physicians can care for their charges. The Austrian Medical Association hopes eventually to place a trained physician in every major factory in Austria. As a result of this plan, postgraduate courses in industrial medicine were organized by the chamber and, in 1957, 300 physicians attended these courses. The success of these courses was such that all 300 doctors who completed them were placed in corporations and factories either on a full-time or half-time basis. The Austrian Medical Association is enthusiastic concerning this response and believe that in this manner a decisive blow can be struck against socialized medicine.

In January Dr. Eberle inspected the medical facilities of a meat processing plant in Vienna and a yarn factory in Vöslau. Those of the meat processing plant were still in the stage of development; but this medical department was the first to be established on the basis of a contract between the Chamber of Physicians and an industrial plant regarding the functions of the plant physician. Representatives of employers and employees both expressed great satisfaction with the new arrangement, and it is planned to extend the function of the plant physician.

The medical facilities of the yarn factory were laid out on a large scale and have proved their practical value in the eight years they have been in existence. The employees were getting good care and the management was anxious to preserve and improve the health of the employees. Dr. Eberle believed that when employees have learned to appreciate the advantages of having a plant physician, they not only will accept one but will demand one. One of the great advantages of an industrial medical service for both employer and employee is its emphasis on preventive measures. Whereas, at first, compensation laws were concerned chiefly with accidents at the place of work, now more and more acute and chronic diseases, due to the influence of work materials and work procedures, have had to be included in these laws.

A large number of work accidents and occupational diseases occur annually in Austria. In 1956, there were 110,746 and, in 1955, there were 100,298 industrial accidents reported. Of this number, 385 in 1956 and 389 in 1955 were fatal. The number of occupational diseases reported in 1956 was 1,077 (2 fatal) and in 1955 was 807 (21 fatal). The number of accidents among adolescents was 9,001 (17 fatal) in 1956 and 7,169 (23 fatal) in 1955. Because automation signifies merely a shifting of the human factor, never the establishment of the primacy of the machine, care for human health and preservation of human working capacity are the most important requirements. Accidental injuries and occupational diseases are, however, the chief threats to the health of the worker and his working capacity. Possible discrepancies between the worker's capacities and the demands made on him should be evaluated. To use the new type of therapy, that is, to evaluate work conditions hygienically and with an eye to quantity in relationship to human capabilities, opens new and promising prospects in industrial medicine. Next to prevention, rehabilitation constitutes the most important work of the plant physician.

In 1956 there were in Austria about 5.4 persons of working age to each person receiving a pension. If the birth rate remains the same, the ratio in 1965 will decline to 4.8:1, and by 1980 it will only be 4:1. Expressed in a different manner, given the prevailing tendency in the expansion in population the portion of the total population that is between 18 and 65 years of age will decrease by 1% up to 1980; however, the pensioners over 65 years of age will increase by 32%. The heavy load which is increased by each advancement in social services and which rests on the shoulders of the working part of the population makes it imperative to use all measures that can ameliorate the human work potential and beyond that make it possible to supply to industry, in the constantly shrinking labor markets, workers who, although partly handicapped by age or illness, can still do nearly a full day's work. To accomplish this it is necessary to install more physicians in industry. Although today nearly 200 physicians in Austria are employed in industrial plants of various types and sizes, this is only a modest beginning.

The items in these letters are contributed by regular correspondents in the various foreign countries.

BRAZIL

Streptococcus.—Dr. C. Solé-Vernin of the Instituto de Microbiologia Medica of Rio de Janeiro made nose and throat cultures for streptococci. He compared aerobic, microaerophilic (with 10% CO_2), and enrichment culture methods. From 597 fished colonies, 60 (10%) did not develop. From the 537 colonies that gave positive subcultures, 231 (43.5%) were shown to be streptococci. Pike's enrichment procedure increased the percentage of isolated colonies from 50% (under aerobic or microaerophilic conditions) to 80%. Dr. Vernin believed that aerobic cultures for streptococci should be discontinued. In the nasal cultures other organisms were much more abundant than streptococci. No Hemophilus hemolyticus or Diplococcus pneumoniae were found in these cultures. This suggests a different constitution of the normal flora in the population of Rio de Janeiro than that observed elsewhere.

Glomerulonephritis.—Nitrogen mustard is useful in the treatment of chronic glomerulonephritis with nephrotic syndrome according to Drs. P. Lima and A. Rofeld (*Revisto do Hospital das clínicas,* vol. 12, December, 1957). Nitrogen mustard was used to treat three patients with chronic glomerulonephritis with nephrotic syndrome. In two, good clinical and laboratory results were observed. In one of these improvement was evident after the first application of the drug, but the laboratory findings returned to normal slowly.

INDIA

Uterine Tuberculosis.—Malkani and Bannerjee (*Journal Obstetrics and Gynecology of India,* vol. 8, December, 1957) analyzed a series of 33 patients with tuberculosis of the uterine cervix diagnosed from 1952 to 1956. In this same period, there were 257 cases of genital tuberculosis in women. The disease was found in all age groups. Erosion of the cervix was seen in 19 patients, adnexitis in 10, and ulceration in 4. None of the patients had pathognomonic symptoms. Most complained of vaginal discharge. Radiologic examination of the lungs revealed active pulmonary tuberculosis in two, and one showed evidence of healed pleurisy. Although a stained smear of the cervical discharge from all patients was examined, acid-fast bacilli were demonstrated in only one such smear. The diagnosis was based on histological examination of a cervical biopsy specimen. In 21 patients the diagnosis was made from a biopsy of the portio vaginalis. In seven patients with tuberculosis of the endocervix, the diagnosis was made from endometrial material obtained by curettage. Curettage was performed on all patients with cervical tuberculosis. In this series, 26 showed evidence of endometrial tuberculosis. In the rest, the endometrial scrapings were too scanty for diagnosis, especially in patients suffering from amenorrhea in whom the endometrium was atrophic. Fourteen patients received antituberculous treatment and all of these were cured. Whereas the lesion in the endometrium showed healing in 8 to 12 weeks, the cervical tuberculosis required about 24 weeks of continuous treatment with antituberculosis drugs.

Depressant Action of Rauwolfia.—Bose and Vijayavargiya (*Current Science,* vol. 26, December, 1957) stated that although much chemical and pharmacological work has been done with the isolated active principles, the action of Rauwolfia serpentina remains complex. Little has been done to elicit the mechanism of Rauwolfia depressant action on various systems. The authors studied the action of three alkaloids of the plant (reserpine, serpentine, and ajmaline) on the oxygen consumption of brain, liver, and heart tissues of rats, using the Warburg technique. Reserpine had a marked depressant action on the oxygen consumption of these tissues, there being a gradual inhibition of respiration with increasing doses. Serpentine also showed a depressant action on these tissues, but the effect was quantitatively less than in the case of reserpine. Unlike reserpine and serpentine, low concentrations of ajmaline caused an increase in oxygen consumption in these tissues, but with higher concentrations there was an appreciable reduction in tissue respiration. Thus of the three alkaloids, reserpine appeared to possess the maximum depressant effect on the oxygen uptake. Reserpine, which is the most potent hypotensive and sedative principle of Rauwolfia, is also the most potent inhibitor of brain tissue respiration which may account for its sedative property. The bradycardia produced by the alkaloid may be due to the diminished oxygen uptake of the cardiac tissue. The stimulation of tissue respiration by ajmaline in smaller doses may be responsible for its convulsant property. Its hypotensive effect in larger doses may be due to its depressant effect on respiration of heart muscle. The alkaloids may have a direct inhibitory action on the cellular metabolism affecting the respiratory dehydrogenase enzyme system. Reserpine has also been found to produce a marked inhibition of succinic dehydrogenase activity in these tissues.

Urinary Excretion of Vitamins.—Pai and Patel (*Journal Obstetrics and Gynecology of India,* vol. 8, December, 1957) studied the relationship between deficiency of vitamin B complex and the toxemias of pregnancy. The test dose used was 5 mg. each of thiamine and riboflavin and 50 mg. of nicotinic acid. The percentage return of each vitamin after giving the test dose was determined. Seven normal healthy women of 19 to 22 were studied for the 24-hour urinary excretion of the three vitamins before and after the test dose was given. The daily urinary output of thiamine varied between 113.7 and 438.7 mcg. (average 267.1 mcg.). The percentage return of the test dose when 5 mg. was given orally varied from 7.29 to 19.05 (average 12.64 ± 1.43%). The daily urinary riboflavin excretion ranged from 369.0 to 785.7 mcg. (average 517.8 mcg.). The percentage return of this vitamin after 5 mg. was given varied between 16.26 and 43.44 (average 25.64 ± 3.72%). The excretion of nicotinic acid before the test dose ranged from 1.02 to 6.51 mg. (average 3.24 mg.). The percentage return after 50 mg. was given, ranged from 3.69 to 16.03 (average 9.75 ± 1.68%). There was no relation between the test dose return of any of these vitamins and the levels of their urinary excretion.

Postgraduate Medical Training.—A four-year course of postgraduate medical training similar to that offered in American universities is being introduced in the K. G. Medical College, Lucknow, under a comprehensive scheme of the state government. The scheme, known as the Resident Training Scheme, is being jointly financed by the state government and the Rockefeller Foundation. The new course is designed to reorient the present residency training program of the college and aims at giving a sound general clinical training and, thereafter, help in the training of specialists in various branches of medical science. It will admit 100 trainees every year. The assistance offered by the Rockefeller Foundation will last only for the first four years, after which the sole responsibility of its financial burden will lie on the state government. The trainees will be given "pocket" expenses at varying rates from year to year in addition to board and lodging. In the initial two or three years, the Rockefeller Foundation might supply some eminent physicians and surgeons from the United States to help in implementing this new program. The foundation might also send one or two members of the staff of this institution abroad to study the training programs in other countries.

Experimental Hydronephrosis.—B. N. Balkrishna Rao and co-workers showed in earlier experiments that sudden complete ureteric obstruction can produce hydronephrosis. It was also thought that a kidney under stress of complete ureteral obstruction and undergoing hydronephrotic changes should be able to recover if the cause were removed. The damage would be related to the duration of stress and there should be an optimal period when, with the removal of the cause, the kidney should partially or wholly regain its normal function. The authors (*Indian Journal of Surgery,* vol. 19, December, 1957) have now reported the preliminary results of drainage of the hydronephrotic kidney with a view to determining the stage of reversibility. Dogs were used for the study and the earlier results of sudden complete ureteral obstruction leading to hydronephrosis were confirmed. The principle of the study was to establish hydronephrosis of varying duration and then to decompress the hydronephrotic kidney by draining the dilated ureteral segment. Histological studies of the kidney and a few biochemical studies of the dog were made. Hydronephrosis was produced by surgical ligation of the left ureter near the ureterovesical junction, a segment of the ureter between two ligatures being excised to prevent recanalization. To provide drainage of the hydronephrotic kidney later, cutaneous ureterostomy, ureterocolic and ureteroureteral anastomoses were tried but were unsatisfactory. Implantation of the dilated ureter directly into the urinary bladder gave satisfactory results. The gross changes in the hydronephrotic kidney before drainage consisted of an increase in the perirenal fat, progressive pyelorenal enlargement depending on the duration of obstruction, gradual diminution in the depth of the surviving renal parenchyma, increase in the capacity of the pelvis, and stretching and elongation of the calyces.

Microscopically, the early changes were dilatation first of the collecting tubules and later of the convoluted tubules. Following this, degenerative changes were exhibited in the epithelium lining the tubules, occurring rapidly with changes of dilatation. Later the tubules disappeared completely and were replaced by fibrosis. The glomeruli first showed lobulation and hyalinization followed by fibrosis until they gradually disappeared. After ureterovesical implantation, the kidney shrank to a size smaller than that of the opposite kidney. Perirenal fat remained unaltered; the depth of the renal parenchyma almost approached the normal; and the calyces became thicker and shorter than normal while the corticomedullary differentiation, though not clear, reappeared. The microscopic changes, especially in kidneys obstructed for 21 days, consisted of the presence of a fair amount of renal cortex with larger number of glomeruli, and only a few areas of patchy atrophy of the collecting tubules in the medullary zone. Drained kidneys of longer duration showed more degenerative changes with little evidence of functioning renal parenchyma. The authors concluded that in the early stages, pelvic outlet of hydronephrosis had been through pyelovenous backflow, and at later stages, tubulovenous backflow.

NEW ZEALAND

Poison Pellet in Party Snapper.—Two boys were rushed to hospitals in two cities after eating a pellet containing metaldehyde found in a party snapper. The pellet was supposed to give off a miniature "snowstorm" when lit. In each case the pellet was labeled "poison" and was accompanied by a warning not to place it in the mouth, but young children cannot be expected to understand this. It is most unwise of manufacturers to put poison of any kind inside a snapper. Almost equally dangerous were such articles as tiny rings, whistles, and charm bracelet trophies, which were also found in some snappers, as they could easily be swallowed by children.

Mental Deficiency Services.—In the December issue of the *New Zealand Medical Journal*, Dr. H. Bourne stated that the supply of institutional beds by the state does not constitute an adequate mental deficiency service. Only a small proportion of mental defectives ever reside in institutions. For the remainder certain special services are necessary. The staff of such services should detect cases of mental deficiency and help patients, their families, and their physicians to prevent breakdowns in social and occupational adjustment and the demands that may then arise for inpatient care, to supply after-care for discharged patients, and to assist with rehabilitating inpatients. Such services include psychiatric departments with mental deficiency and child guidance clinics in general hospitals; educational facilities; a register; nationally coordinated provision for the employment of disabled persons, whether crippled physically or mentally; and proper instruction of medical students in the nature of mental deficiency and the importance of this social problem, which, to some degree, affects over 2% of the population.

As yet nothing of this kind is found in New Zealand's mental health plans and policies. There are no community mental deficiency services, and such facilities as do exist are serviced by the education department, rather than by the health department, and by lay voluntary bodies, such as the Intellectually Handicapped Children's Parents' Association. For inpatient treatment a small fraction of the country's 11,000 mental hospital beds are used for mental defectives and those only in a custodial fashion, for the most part. If a start must be made with expenditure on beds, then, with the small and scattered population of this country, the dual functions of rehabilitation and easing the burden of the parents can only be obtained by establishing small and scattered institutions. Large institutions are suitable only for heavily populated areas. Small residential centers, closely linked to the community, where rehabilitation can be easily carried out are the solution to the problem. There is no reason why such centers should not be operated by the local hospital boards, rather than from the capital.

Bronchography in Children.—Morkane and Pryor (*Australian & New Zealand J. Surg.* 27:155, 1957) described a technique for apneic bronchography in children. The requirements to be met to conduct any anesthetic bronchoscopy and bronchography in children are avoidance of explosive agents, adequate oxygenation of the patient, some form of apneic technique to obtain clarity of pictures, removal of secretions, and a rapid return of the protective cough reflex. The problem is still more difficult in debilitated children. For children 1 to 6 years of age, rectally administered thiopental (20 mg. per pound of body weight) is given in the ward; and when the patient is asleep, 10 to 50 mg. of succinylcholine chloride is given and the lungs inflated gently with oxygen. The vocal cords and trachea are then sprayed with 2% lidocaine solution and the lungs reinflated. At the conclusion of the bronchoscopy another 10 to 15 mg. of succinylcholine is given and the patient again fully oxygenated. A special bronchography endotracheal tube is inserted and its position checked by screening. The portex tubes used are of varying sizes and they have a small vinyl portex side tube attached with vinyl portex cement. The side tubes carrying the opaque medium are joined to the convex surface of the endotracheal tubes for ease in introducing between the vocal cords. The patient is maintained with controlled respiration with a 2:1 mixture of nitrous oxide and oxygen on a semiopen circuit. Additional small increments of succinylcholine are given as required. This technique has the following advantages: only small amounts of dye are required to get good pictures and, since it is an apneic technique, there is no blurring of the picture due to chest movements during the exposure. Laryngeal spasm is particularly likely to occur after extubation due to the irritant effect of the secretions on the vocal cords, and the child should not be allowed to return to the ward until the anesthetist is satisfied that all danger of such spasm is past.

SPAIN

Medical Ethics.—Dr. J. A. Palanca, professor of hygiene of the University of Madrid and ex-general director of public health, at the inaugural session of the Deontologic Academy of Madrid said that the problem of medical ethics was part of the general problem of social ethics. Social ethics have long been under the control of the church. The medical profession, on the contrary, has lost its influence on the people because of the virtual disappearance of the family physician who in the past exerted a great influence on his patients. Specialists are no substitute for the family physician because their attention is centered on only one part of the patient and because they do not appreciate the small problems faced by their patients. Dr. Palanca said further that the necessity to make a living forces some physicians to look for more than one position. No physician can support his family on the income from only one position. There is no doubt though that certain abuses have arisen as a result of this practice. These abuses should be dealt with within the profession. Regarding the competition for appointments on the faculties of universities, one of the gravest dangers is the use of political influence in obtaining such a position.

UNITED KINGDOM

World Medical Association.—The British Medical Association has set up a supporting group for the World Medical Association to increase interest in its work and to raise money for it. The B. M. A. makes an annual contribution of about $12,000 a year to the W. M. A., a contribution exceeded only by that of the American Medical Association.

Public Telecast of Operations.—The British Broadcasting Corporation is televising a series of weekly programs under the title of "Your Life in Their Hands," showing major surgical operations and procedures being performed in hospitals throughout the country. Most of these are live telecasts, and emphasis is being placed on the first-class surgical work that is done outside London. These are the first telecasts of this kind made for the general public. Among the topics shown are the radiologic treatment of cancer, cardiac operations, the surgical treatment of head injuries and tuberculosis, and the use of controlled respiration in surgery and in the treatment of respiratory paralysis resulting from poliomyelitis. Visits will be made by the television camera men to hospitals at Oxford, Manchester, Birmingham, Cardiff, Bristol, Glasgow, and Leeds. The B. B. C. states that the public have a genuine and not a morbid interest in disease, and that these telecasts are devised to satisfy this. The producer of the series has been careful to get all material approved by the hospital concerned and to obtain written permission for consent to appear from the patients concerned. General medical opinion is that such telecasts to an educated public cannot fail to do good, and that the chance of producing hypochondriacs by this means is small. Another view is that more people may consult their physicians earlier for the treatment of serious conditions if they see these telecasts. This would outweigh the possible disadvantage of visits to physicians for trivial or imaginary complaints.

Dietary Fat and Coronary Disease.—J. F. Brock (*Practitioner*, pp. 180-191, 1958) stated that for people who have already had a coronary thrombosis, who suffer from angina pectoris, or who have a strong family history of coronary disease, reduction of serum cholesterol levels in excess of the mean for age and sex is desirable if this can be achieved by simple dietary modification and that such reduction might improve the expectation of life and health in the person at risk. Further, the required modification can be made by adjusting the quantity or quality of fat in the diet without adversely affecting one's health in other respects. On the other hand, the situation is too uncertain to justify pronouncements by those who administer laws about food production and who control nutrition education. In the past, dietetics has been a rich field for quackery, and public health administrators are wise to avoid far-reaching recommendations until the case for action has been proved. No reliance should be placed on a single reading of the serum cholesterol level. The case for dietary modification must be judged in each case in relation to the trend of serum cholesterol readings and the estimate of the extent to which the patient is at risk of coronary occlusion. Restriction of fat should not be too strict. A reasonable objective is 30% of the caloric intake from fats. At this level weight can be maintained, and the palatability of the diet is not seriously impaired. There is no need to reduce cholesterol intake as such since there is no experimental or theoretical justification for believing that the cholesterol content of the average diet contributes materially to the level of serum cholesterol.

Laboratory Tuberculous Infection.—In 1957 Reid stated that over a five-year period 96 new cases of tuberculosis were reported in an average laboratory population of 4,824; on the basis of the age and sex distribution of that population only 36 new cases would have been expected. Of the observed laboratory population, about 10% of the men and 30% of the women had had no contact with tuberculous material, and among them the observed rate of infection was no higher than expected. This problem has been investigated by a working party, which has made a report to the Public Health Laboratory Service (*Monthly Bull. Ministry of Health*, vol. 17, 1958, p. 10). The purpose of the report is to indicate the dangers that accompany tuberculosis work in the laboratory so as to enable pathologists to take such precautions against them as seem desirable in the circumstances.

There are obvious advantages in removing potentially dangerous operations from the general laboratory but, unless the separate laboratory is of adequate size and well ventilated, the risk of infection to the person working in it may be greatly increased. The use of one particular bench in a large, common laboratory may be safer than partitioning off a tiny unventilated cubicle for examination of tuberculous material. Not all laboratory technicians are happy working on their own in a separate room, and there is a real danger that technique may become slipshod owing to lack of constant supervision by the pathologist and senior technicians. This disadvantage can be minimized by the provision of glazed partitions or observation windows between the separate tubercle room and the laboratory. Benches should have a smooth, impervious surface free from cracks that stands regular swabbing with Lysol. Contamination of the bench top from the outside of sputum containers and centrifuge tubes can be prevented by standing them in metal trays that can be sterilized by heat. Continuous irradiation of the upper air in the room with ultraviolet light is of doubtful value.

All new recruits, including clerical and maintenance staff, should have a tuberculin test on starting work in a laboratory where tuberculous material is handled. If the reaction is negative, vaccination with BCG should be offered, and the recruit should not be permitted to handle tuberculous material until the skin reaction has become positive. In some laboratories it would be justifiable to refuse to employ a tuberculin-negative person who refused BCG vaccination. All recruits should be x-rayed before employment. The frequency of subsequent x-ray examinations must be a compromise between the desire for the earliest possible knowledge of any radiologic evidence of infection and the risk of excessive radiation. An annual examination probably represents a fair compromise. Entirely untrained persons should not handle tuberculous material. In general, specimens should not be unpacked or handled by clerks or other persons untrained in laboratory technique. Should it be necessary for a clerk to unpack a specimen (for example, to determine to which of a number of laboratory departments it should be submitted), she should wear protective clothing and receive some elementary bacteriological instruction. Operating gowns fastened at the back should be worn. No mask less complex or uncomfortable than the service type gas mask will protect against the inhalation of infected particles. The operating mask of gauze and cellulose does protect against splashes and large droplets infecting the mouth and face in the autopsy room. Smoking when dealing with infected material, both in the laboratory and autopsy room, is dangerous and should be prohibited. Food and drink should not be consumed in the laboratory.

Prematurity and the Handicapped Child.—A study of the growth and development of premature and of full-term infants, which is entering its fourth year, indicates that although most prematurely born children, especially those weighing between 4.5 and 5.5 lb. (2,000 and 2,500 Gm.) at birth, attain to a physical and mental status approximating that of their full-term siblings, yet there remains a large excess of handicapped children in the premature group and a disproportionate number who are undersized and subject to constant illness, according to C. M. Drillien (*Health Bulletin,* vol. 16, 1958, p. 6). On the basis of the developmental quotient (the ratio of the mental age to the chronological age, allowing for the degree of prematurity), only 14 of 38 children between the ages of 2 and 5 years, who weighed less than 3 lb. (1,360 Gm.) at birth were graded as normal or superior; 13 were definitely dull, 7 were high-grade defectives; and 4 were low-grade defectives. A comparison of the average development quotients for four birth-weight groups of children under the age of 3 years showed that it was 106 for those weighing over 5.8 lb. (2,630 Gm.) at birth, compared with 81 in those weighing less than 3.1 lb. (1,400 Gm.).

The incidence of severe physical abnormalities was much higher among premature children. Thus, of 23 severely handicapped children, only one weighed over 5.5 lb. (2,500 Gm.) at birth. Of the 54 children with a birth weight of under 3.9 lb. (1,770 Gm.) four had cerebral palsy, two had recurrent epileptiform convulsions, three had severe deafness, and one was blind due to retrolental fibroplasia. The number of children hospitalized in the first two years of life was twice as high in the premature group, and the total number of admissions was nearly three times as high in this group. Of medical conditions necessitating admission to hospital, bronchitis and pneumonia showed the biggest differential between the two groups. The incidence of children suffering from constant illness throughout the first two years of life was 20.4% among the premature, compared with 6.1% among the full-term. In the school-age group, a predisposition to lower respiratory infections persisting since infancy was reported in 12 of 29 patients for whom a reliable history could be obtained.

Blindness.—The total number of registered blind persons in England and Wales on Dec. 31, 1956, was 96,019 (40,803 males and 55,216 females), of whom 2,301 (2.4%) were under 16 and 79,766 (83%) were over 50. The statutory definition of blindness is being unable to perform any work for which eyesight is essential. This is generally interpreted as vision of 3/60 or less. Most registered blind have some degree of vision, and less than 5% of the newly registered are totally blind, that is to say, have no perception of light. The number of registered blind has been rising steadily for many years, the increase being most marked in the higher age groups. In 1955, 70% of all newly registered blind were 70 or over and almost half of these were 80 or over. The marked increase in the number of aged blind is largely accounted for by the increasing number of aged in the general population. The number of partially sighted persons on Dec. 31, 1956, was 20,329, of whom 7,957 were male and 12,372 female; 2,190 (11%) were under 16, and 14,645 (72%) were over 50.

Blindness due to such infections as ophthalmia neonatorum and syphilis has virtually disappeared, and the commonest causes of blindness among young children are congenital anomalies and retrolental fibroplasia. In older persons cataract, glaucoma, and senile macular degeneration combined account for 80% of new registrations. New registrations in the persons between 16 and 65 show myopia, diabetes, and trauma as the most significant conditions. In a memorandum on the subject, the Ministry of Health describes as disquieting the fact that some 80% of persons registered as blind from cataract and some 40% of those registered as blind from glaucoma have had no treatment. Although there are more females than males on the register, trauma accounts for many more cases among men: 7 to 10 times as many men as women are blinded from accidents, principally in the active years.

Drugs for Athletes.—That there is no evidence whatsoever of drug addiction of any kind by athletes in this country was the opinion expressed by Sir Adolphe Abrahams in opening a discussion on the use and abuse of drugs by athletes organized recently by the Society for the Study of Addiction. The Amateur Athletic Association has issued a rule that drugs may not be used to produce better athletic performances and has asked the British Association of Sport to define what is a drug in this context. As Sir Adolphe pointed out, no reasonable person would object to tea and coffee, even though they contain caffein. Similarly, alcohol is a drug, but no one except ardent teetotallers would ban its use by athletes. Are we to refrain from the use of drugs that sharpen the appetite, improve digestion, and so contribute to physical well-being, or from a simple sedative to ensure a good night's sleep for an overanxious youngster on the eve of a contest? If amphetamine and cortisone can directly release another reserve of energy, are they not to be accepted as contributing to normal physiological well-being? There was no criticism of the use of oxygen in ascending Mount Everest. If it were practicable to construct a tunnel with oxygen-enriched atmosphere in which runners competed, record performances would be accomplished. Would this be approved? If not, what is the difference between climbing Mount Everest and beating any other record?

Action of the Sulfonylureas.—The sulfonylureas appear to decrease the hepatic output of glucose in patients with both stable and unstable diabetes, according to J. M. Stowers and co-workers (*Lancet* 1:278, 1958). Because insulin was not rendered more effective by carbutamide or tolbutamide, except possibly in patients in the fasting state, it was considered unlikely that these drugs inhibited the destruction of the insulin given. Although the patients with brittle diabetes studied were not of the type usually considered to respond to the sulfonylureas and fell into the category of diabetics probably lacking insulin of their own, both carbutamide and tolbutamide lowered fasting blood sugar levels in 6 of 11 patients and decreased variations in blood sugar level in 8 of 9. These actions were not thought to be due to any stimulus to production of insulin. It is admitted that the data presented did not exclude the possibility of a stimulus to the secretion of insulin, particularly if sulfonylureas were to have more effect on the action of insulin on the liver than elsewhere, but, on the other hand, no evidence was found to support this hypothesis.

Acute Respiratory Disease in Babies.—The Ministry of Health reported that since Jan. 20 there has been an increase in the number of babies needing hospitalization in London. Between 33 and 50% of all admissions arranged by the emergency bed service on account of acute respiratory disease has been for children under the age of 5, mostly for those between the ages of 3 months and 2 years. There has been no corresponding increased need for hospital beds for older patients. A similar situation was observed in Birmingham. The babies usually had a history of a progressive coryza with rapidly developing involvement of the lower respiratory tract. The more severely ill were restless and cyanotic, with intercostal recession on inspiration and other evidence of obstruction of the respiratory tract, but signs of consolidation were not prominent. A few deaths occurred. In many cases, oxygen therapy was required. Antibiotics had no effect on the course of the illness, although they may have helped to avert secondary infection. There was no evidence to suggest a bacterial cause. Similar outbreaks were reported in November, 1953, in London, Liverpool, Manchester, and Sunderland. Efforts to show that these were due to influenza or other viruses were unsuccessful, and the cause was never established.

Dermatitis in the Steel Industry.—An analysis was made by H. R. Vickers (*Brit. M. J.* 1:199, 1958) of the probable cause of dermatitis arising in 250 workmen employed in the steel industry, in whom the condition was thought to be due directly to their work and in whom the dermatitis was so severe that they had to be absent from work for at least three weeks. The largest group (34.8%) were incapacitated by dermatitis arising directly as a result of treatment of a relatively trivial injury such as a superficial burn or a small cut. The sensitizing agents most commonly used were acriflavine and its analogues and penicillin. In other cases various proprietary so-called antiseptics were responsible. In Vickers' opinion, the treatment of relatively trivial injuries should consist in the area being cleaned thoroughly with 1% cetrimide solution and either a sterile dry dressing or a dressing of sterile paraffin, the dressing not being disturbed until healing has taken place.

CORRESPONDENCE

REGULATING YOUR OWN FEE SCHEDULE

To the Editor:—It is possible to control your own fees, even though some of your patient's bills are paid for by welfare and rehabilitation state agencies, by union welfare plans, or by the Veteran's Administration in any type of hometown care program. This is simply a matter of proper billing.

Since time memorial, family physicians and specialists have been caring for marginal patient groups and for those who could pay nothing. At first, this was done voluntarily in the hometown private office, before there were welfare agencies. Later, some private physicians were accustomed to caring for indigent patients in clinics, usually associated with medical schools and public hospitals. The doctors usually rotated in staffing such clinics, to which they donated their services. This way of furnishing medical care to groups at a low economic level ran into trouble because some of the well-to-do were able to get by the social service screening into these free clinics. Most of these people were not "chiseling," but simply felt that the best medical care was usually associated with university and research centers. Such clinics usually had a teaching function.

In the last two decades, there has been a rapid increase in the number of public agencies who were responsible for clients requiring some form of medical care. Thus began the much publicized and talked about topic of the fixed fee schedules, which many fear are leading to some type of government control.

James L. Doenges, in a recent *Medical Economics* article (35:198 [Jan. 20] 1958) entitled "Fixed Fees Lead to Government Control," says: "As an independent practitioner, you doubtless abhor the thought of Government-controlled medicine. Yet each year more and more doctors accept fixed fees—both in principle and in practice. Since the fixed-fee concept is a keystone of Government medicine, America's physicians are playing right into the hands of those who advocate control." When you permit any outside source to fix your fees, this physician maintains, you are asking for trouble. Actually, many physicians cannot avoid doing work for the above-named agencies and such organizations as the Blue Shield under minimal rate schedules.

How are we going to maintain control of our own fees?

I have found a way of billing those from whom I have had to accept less than standard fees. In doing this, I have maintained my own fees by the simple expedient of billing at the rate of my regular charges, and listing as "courtesy" an amount that was obtained by subtracting the fixed agency fee from my regular charges. Thus, if I examine or treat a welfare patient for whom the public assistance department can only pay $10, whereas my specialist consultation fee is $25, the bill is typed out as follows:

County Welfare Department
County Seat
Pa.

For Professional Services Rendered $10

Bernie Jones

Consultation	$25
Courtesy	$15
Balance	$10

Payment received on......................................

By following this procedure, the standard fees for the area are officially maintained. A well-to-do patient cannot feel that I have one scale of charges for the rich and one for the poor. This is especially important if one of my own private patients cannot afford to pay my regular fee. At the same time, I am maintaining my own fee schedule and in effect doing what the practitioners did years ago, doing charity work in their own offices. It is also self-evident that such a process of billing not only induces appreciation but also adds pressure to keep the fee rate at a reasonable level.

Why would it not be advisable for most physicians to bill in this manner? Hospitals, serving all economic levels and running clinics with staff physicians, could also, wisely, follow the same plan.

In these days, with the struggle to maintain adequate medical care and at the same time preserve the patient's free choice of his own physician, the medical profession needs to constantly and clearly interpret its position to the general public and agencies alike.

An economist once told our county medical society, "If you doctors don't arrange to distribute your services voluntarily, you deserve to be socialized with all its attendant evils."

There may be many ways to accomplish an objective, but usually the simplest method is the best. Doesn't the above illustrated manner of billing any fixed fee agency clearly portray the position of the average physician who is continuing to do his best to equitably distribute medical care?

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LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

The M'Naghten Rule and the Irresistible-Impulse Test.—The defendant was found guilty of murder. From the judgment of conviction, he appealed to the Supreme Court of Nevada.

One of the grounds of appeal related to the court's definition of insanity as a defense in a criminal action. Since 1889 the "right and wrong" test, patterned after the English M'Naghten rules, has been followed in Nevada. That test is: "To establish a defense on the ground of insanity, it must be clearly proved that at the time of committing the act the defendant was laboring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong." The defendant attacked this test as unjust, unrealistic, scientifically false, and outmoded.

The right and wrong test, said the court, has been criticized from time to time ever since its announcement, but it continues to be followed in most jurisdictions. In this case, criticism was directed to the fact that the definition is set forth by rule. It is universally recognized, continued the court, that not every mental disorder should be regarded as sufficient to relieve one from criminal responsibility. So long as this be true it must be recognized that there are limits which may, in the public interest, be validly imposed upon the area within which the judgment of the jury and the psychiatrists can operate. In the interest of uniform administration of criminal justice it may reasonably be contended that these limits should be fixed as best they can and thus be made applicable in all cases.

To leave "insanity" undefined would be to eliminate the entire statutory concept of insanity as the limited and uniform basis for relief from criminal accountability. It would substitute in its place a jury power of moral judgment unlimited by those very bounds which statute law comtemplates and based solely upon the conscience and common sense of 12 persons. Such a sweeping change of approach, in disregard of limits and conditions contemplated by statute, is, we feel, beyond the reach of the judicial function as that function is recognized in this state. In our view, said the court, the problem with which psychiatry and the law both are struggling should be judicially attacked upon the basis of agreement upon a test under which both law and psychiatry can best operate. Should the right and wrong test be modified by the irresistible-impulse test?

Among the psychiatrists themselves, said the court, there is much doubt as to the validity of the concept of irresistible impulse in the sense of a loss of volitional control through mental disorder that does not necessarily affect the intellectual powers of the defendant. In other words, the psychiatrists as a group apparently are not agreed that the urge to commit an act which one knows to be wrong can, through mental disorder, become irresistible. Further, there is doubt among the psychiatrists as to their ability to distinguish between those cases where lack of volitional control is properly attributable to mental illness and those where it is due simply to a failure to resist that which could have been resisted had the power to resist been exercised. It is felt that to recognize the irresistible-impulse test as an independent test of insanity without specific limitation, is to make the defense of insanity available to psychopaths and neurotics who ought not to be freed from accountability for their actions.

The court pointed out that a survey made by Dr. Guttmacher of members of the American Psychiatric Association indicated that 60% did not believe the concept of the irresistible impulse to be psychiatrically and legally sound.

With all the opposition to the M'Naghten rule, concluded the court, we must yet adhere to it until a rule can be substituted which more accurately reflects current scientific knowledge. We can hardly recognize as scientific truth a rule which has failed to receive the approval of what we may regard as the most enlightened segment of society in this field of knowledge.

The Supreme Court, therefore, held that the instructions given by the trial court on the question of insanity were correct. The judgment of conviction was reversed for other reasons, however. Sollars v. *State*, 316 P (2) 917 (Nevada, 1957)

Right to Read to Jury from Entries Made on Hospital Record.—This was an action for damages for the death of a patient from the alleged administration of an incompatible blood transfusion in the defendant hospital. From a judgment in favor of the defendant, the plaintiff appealed to the Supreme Court of Utah.

Ten days after an operation for the removal of a tumor, the plaintiff's wife died from an inflammation of the kidneys. The basic issues contested by the parties were: 1. Did the deceased receive an incompatible blood transfusion from which she died? 2. If so, was the defendant hospital negligent in connection with administering it, or in failing to stop it after an unfavorable reaction was noticed? The jury resolved these issues in favor of the defendant, but on appeal the plaintiff contended that the trial court had erred in its ruling upon some of the evidence submitted.

Two doctors, who had been called in consultation with reference to the treatment of the deceased, made certain entries in the hospital records. These notations were as follows: "Pelvic Laparoling 4-453 followed almost immediately by a chill and dark urine . . . This pt is going into some type of renal decompensation possible on the basis of a transfusion reaction . . ." Signed "V. L. Rees." And at the bottom of the same page of the progress notes: "This is undoubtedly a Lower Nephrone Syndrome from hemolytic Blood Transfusion . . ." Signed "KAC"

These entries obviously had a direct bearing upon the question of whether or not the deceased had received a transfusion of incompatible blood which had caused her death, and the attorney for the plaintiff wanted to read them to the jury and comment upon them in his argument. The trial court allowed the defendant's objections to such procedure.

The surgeon who had performed the operation on the plaintiff's wife testified at the trial that in his opinion the patient probably died as a result of a blood transfusion reaction. The hospital pathologist, however, refused to concede that there was any definite proof that such a reaction had even occurred. The hospital entries, therefore, had a direct bearing on a critical and disputed issue.

The defendant hospital contended that since the doctors who made the notations were not employees of the hospital, such entries were neither admissible nor binding upon it. The Supreme Court of Utah admitted such rulings in other states but said that it adhered to the view that admits evidence of the character here in question notwithstanding the fact that it represents in part doctors' opinions as to the patient's condition. The notations were recorded as information deemed pertinent to the patient's care and treatment by persons performing duties in that regard. We have heretofore recognized, said the court, that the entering of data on hospital records by personnel so engaged carries sufficient guarantees of trustworthiness to render them admissible in evidence and worthy of consideration by the fact finder in connection with the other evidence in the case. The doctors attending the plaintiff's wife come within such classification, and entries they made upon the hospital record in connection with their duties in rendering medical service to this patient are competent evidence to be considered for such purpose.

The defendant further contended that, assuming the notations are competent evidence, it was nevertheless but harmless error for the trial court to sustain his objection to their being read and argued to the jury because the records had actually been received in evidence and were there for the jury to read if it so desired. The Supreme Court conceded that the records were there for the jury to read but pointed out that such records were couched in such terms that they could stand some elaboration for the benefit of those uninitiated in the mysteries of medical terminology. This emphasizes the importance of according the plaintiff's counsel the opportunity of performing one of his essential functions: that of arguing his cause to the jury. In doing so, he should be permitted to refer to and use all of the competent evidence he has marshalled and presented in the trial, and to explain its meaning and argue its significance to the jury. Some indication of the importance of the error with which we are here concerned, added the court, is to be found in the fact that the counsel for the defendant thought the matter of sufficient consequence that he objected to the reading and use of the evidence in the argument to the jury. The court felt that it was somewhat inconsistent that counsel now urges that depriving the plaintiff of the use of such evidence was merely harmless error. If it is so plain that it would not have helped the plaintiff's case, one is led to wonder why the counsel made the objection and insisted that it not be used. The obvious answer seems to be that the defendant's counsel was apprehensive that it may have a substantial effect against his client.

In view of the fact that there is such substantial doubt that we cannot, with any degree of assurance, affirm that the use of such evidence would not have been helpful to the plaintiff, the doubt should be resolved in favor of allowing him to have a full and fair presentation of his cause to the jury.

The judgment of the trial court in favor of the defendant hospital was therefore reversed, and the case was remanded for a new trial. *Joseph* v. *W. H. Groves* Latter Day Saints Hospital, 318 P(2) 330 (Utah, 1957)

THE LEISURE CORNER

AUTO CAMPING

The relatively recent development of public auto camp grounds, equipped with modern conveniences, provides a background of vacation fun. These are usually located in scenic beach and forest areas and operated under state and federal jurisdiction. Auto camping will prove especially attractive to doctors who prefer this type of camping to "roughing" it, since it lends itself to an easygoing, healthful experience with many of the comforts of home.

Everywhere throughout our country public parks and forests are extant in which one can camp in various degrees of comfort and where facilities for recreation have been organized for every member of one's family. These camping grounds are usually free of charge; others assess a nominal fee.

Camping as such is not new on the American scene. Its popularity has skyrocketed among family groups since the end of World War II. The organization of camp grounds with modern facilities has taken all the hardships out of camping. In most parks modern toilets and washrooms are within easy reach from the spot on which you pitch your tent. Water hydrants and faucets are provided with safe drinking water available. The basic necessities for a pleasant vacation stay are always on tap.

It will interest you to note how readily, in this type of environment, you can become accustomed to living in a tent. Since campers go into the woods to be out of doors, to cook, eat, and enjoy activities in the open air, tents by themselves are merely an adjunct, handy for shelter or as a source of privacy, essential in case of rain, and conveniently portable. Solitude need not be endured unless there is a deliberate attempt to seek out remote camp sites. For the gregarious person a small tent community acts as a magnet. Campers as a rule not only are gregarious if offered any encouragement but also will respect privacy.

Housekeeping in a camp is simpler than at home, provided an effort is made to avoid accumulating a lot of gadgets and unessential equipment. If sleeping close to the ground in a sleeping bag has no appeal, there are aluminum folding cots to be had, and air mattresses for sound sleep.

Many camping doctors have found that the out-of-doors life seems to slow down the clock. Life is completely unhurried and items hitherto regarded as conveniences are quite unnecessary, especially since their only virtue in the first place was a slight saving of time in the hustle and bustle of city life.

As for the fear of wild life, it is known that no wild animal will deliberately attack a human being. The forest is no menace to those who take a little time to become acquainted with the many fascinating aspects of its quirks and peculiarities.

As a rule, a beginner in the art of auto camping should start off with a week-end camping trip. State parks are best for short-term camping. They are convenient to reach, are plentiful in number in many states, and seldom require more than an hour or two of driving. Camping grounds are well marked, planned for maximum comfort, and insure a proper amount of exclusiveness in combination with convenient accessibility to the center of activities. After you have chosen a camp ground in a public area which offers the potentialities of greatest interest to you and your family, the next important consideration is the selection of equipment. By far the most important item is that of shelter.

There are many different types of tents, ranging from a simple army tent to an elaborate bungalow tent. The choice depends largely upon one's purse and the degree of comfort sought. The umbrella tent is easy to erect and involves pegging down four corners and then lifting it up on its rib frame. The cost of a good umbrella tent ranges anywhere from $40 to $100, depending on the number of persons to be sheltered. The pup tent is a "crawl-in" type, oblong, and sloping in an "A" shape from center poles at either end to a height of about 4 ft. It can be erected in a few minutes, may cost as much as $30, and can be purchased at any Army goods store.

Bedding is an equally important item. Sleeping bags, lined top and bottom with kapok or wool, are very desirable. Fancy arctic bags may prove to be too hot for summer; on the other hand, cheap cotton batting lumps up and lacks warmth for cool nights. First-aid kits are always taken along for possible emergencies; if the doctor itinerant runs true to habit he will invariably take along his entire medical bag. In general, the total cost of equipment usually required for a traveling camp will range anywhere between $150 and $275 for a family of four. The weight should average from 200 to 300 lb.

If you camp in state parks, the resident custodian can offer helpful advice on the scenic spots of the area. He will direct you to the best fishing places and suggest the most picturesque animal and bird sanctuaries. If you decide on forest camping, you will find the National Forest Service men ready to help you enjoy your visit. No matter how busy they may be with the task of conservation and supervision of commercial operations, they always find time to answer questions patiently or assist in an emergency; all of this is done with a genuine personal interest and extreme courtesy. Forest Service men are a guarantee that a camping trip in national forests will prove most enjoyable.

Auto camping, like any other specialized form of activity, has its code of ethics. Most people who go camping have little trouble adjusting to the circumstances characterizing outdoor community life. It is always wise to select a camp site with due regard to the privacy of one's neighbors. Drive your car into the designated parking space and maintain the grounds as close to their natural state as possible. Remember to preserve the same modesty of behavior that is appreciated at home, dress in the privacy of your shelter, and wear an adequate amount of clothing.

The "Motorist's Guide to Public Playgrounds" is intended to provide essential information concerning every public area in which camping is permitted and in which camp grounds are accessible by automobile. The "Guide" lists all the basic data you will need in planning a camping vacation. The following definitions are an example of a key to camping facilities:

Primitive: Facilities either inadequate or nonexistent. Family camping possible, but not advised

Permitted: Lacking one or more of the following facilities—table, fire grate, readily accessible water supply—but always equipped with toilets. This designation is also applied where picnic grounds permit camping but prefer not to encourage it.

Developed: Scientifically developed for camping and providing at least a table, fire grate, toilets, and readily accessible water supply.

Highly developed: Providing laundry and shower facilities in addition to basic requirements of a developed camp ground. Often includes flush toilets, electric outlets, cooking shelters, tent platforms, and food storage facilities.

If you and your family wish to see America more intimately and enjoy all its loveliness with a minimum of cost, then gather your group, carefully plan your equipment, pick your vacation spot, and merrily take to the highway.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Fever, Infection and Host Resistance in Acute Leukemia. R. T. Silver, J. P. Utz, E. Frei and N. B. McCullough. Am. J. Med. 24:25-39 (Jan.) 1958 [New York].

The authors report on 19 children and 17 adults, 18 male and 18 female patients, with acute leukemia. Fever and infection were studied with comprehensive bacterial, fungal, and viral techniques. The average period of observation was 72.6 days. As a group, these 36 patients were febrile for 1,162 (44.5%) of the total of 2,614 days of observation. Only 2 patients had no febrile episodes during the period of observation. Fifty-nine of the recorded 92 febrile episodes appeared to be related to infection. Bacterial, viral, or fungal infection could not be determined as a cause of fever in the remaining 33 febrile episodes. Age and type of leukemia did not significantly affect the rate of febrile episodes. However, more febrile episodes related to proved or presumptive infection occurred in adults than in children. Pharyngitis, pyelonephritis, and septicemia were the most common clinical illnesses associated with the proved infection. Occasionally, relatively avirulent bacteria were capable of causing serious clinical infection. The most frequently observed organisms were Escherichia coli, Micrococcus pyogenes var. aureus (coagulase positive), and Pseudomonas aeruginosa. Infections caused by Ps. aeruginosa were the most difficult to treat.

At the conclusion of the observation period, 14 of the 36 patients were dead. Ten (71.4%) of these died with overwhelming infection. Survival after infection was common, in the absence of bacteremia, if intensive and appropriate antimicrobial therapy was employed. Most of the febrile episodes in the 15 patients with presumptive infections were related to pneumonia and other infections of the respiratory tract. From the standpoint of patient care, it is to be emphasized that the initial absence of a focus of infection on physical examination does not rule out infection as a cause of fever in acute leukemia. Although the development of an infection in a patient with a fever of undetermined origin was not infrequently heralded by a qualitative or quantitative change in the temperature pattern, there was no reliable method for excluding the possibility of infection other than laboratory studies, particularly blood cultures and chest roentgenograms. Of 14 febrile episodes of undetermined origin which persisted after 2 weeks of antibiotic therapy, 8 eventually terminated in serious bacterial infection. Appropriate management for persistent fever of undetermined origin requires continual reappraisal to insure that a superimposed infection, masked by preceding unexplained fever, has been detected.

The Transbronchial Measurement of Left Atrial Pressures in Mitral Stenosis and Insufficiency. M. Rubin and S. Shah. Am. Heart J. 55:55-65 (Jan.) 1958 [St. Louis].

Left atrial pressure tracings were obtained with the transbronchoscopic method in a consecutive series of 56 patients with mitral valvular disease in whom topical anesthesia was produced with a mixture of 10% cocaine hydrochloride and 2% tetracaine (Pontocaine) hydrochloride solution. The procedure proved to be simple and relatively safe. There were no serious complications as a result of bleeding or infection caused by the needle puncture of the bronchus and the left atrium. Peripheral embolization occurred in 1 patient. Fatal ventricular fibrillation occurred in 1 patient after topical anesthesia of the tracheobronchial mucosa; the death was attributed to a cocaine reaction.

The atrial pressure tracings were satisfactory in 42 of the 56 patients. A diagnosis of predominant mitral stenosis was made from the tracings in 19 of the 42 patients, and 14 of the 19 were treated surgically. Mitral stenosis, as evidenced by fused mitral cusps and a small mitral orifice, was noted in 13 of the 14 patients. There were 18 patients with left atrial pressure tracings compatible with predominant mitral insufficiency; all but 4 of these tracings were obtained from patients with atrial fibrillation. The clinical findings in these patients were those of mitral insufficiency. The left atrial pressure tracings thus were found to be clinically reliable in distinguishing predominant mitral stenosis from insufficiency. Small degrees of insufficiency in patients with predominant mitral stenosis

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The place of publication of the periodicals appears in brackets preceding each abstract.

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may not be detected by means of atrial pressure tracings. In the presence of atrial fibrillation, mitral valve incompetency may be augmented as a result of the cardiac arrhythmia and this may produce an exaggerated insufficiency pattern.

Pulmonary Sclerosis Due to Tabagism. N. G. Lupu and C. Velican. Presse méd. 65:2184-2187 (Dec. 25) 1957 (In French) [Paris].

Guinea pigs were subjected to the inhalation of the smoke of half a cigarette within a quarter of an hour daily for periods up to 6 months, and rabbits were subjected to the same procedure for periods up to 16 months. Microscopic examination of the lungs of the animals which were killed at various intervals during the periods of tobacco inhalation revealed a progressive process of pulmonary sclerosis in all of the animals. The histamine level in the lungs of the animals increased from 30 mcg. per 1 Gm. of lung tissue in the normal animal to 104.48 mcg. after 90 inhalations. These findings suggested that pulmonary sclerosis caused by the inhalation of excessive tobacco smoke is in reality a histamine sclerosis. In an attempt to elucidate this problem, the animals were given an injection of 0.001 Gm. of promethazine (Phenergan), an antihistamine agent, 30 minutes before each tobacco inhalation. This procedure resulted in a subnormal level of 19.20 mcg. of histamine per 1 Gm. of lung tissue after 90 inhalations and prevented or notably delayed the development of sclerotic changes in the lung.

Radiologic, spirometric, hematological, and biochemical examinations which were performed on 20,000 hospitalized patients with various diseases revealed the presence of pulmonary sclerosis in 9.5% of these patients, independently of whether they were heavy smokers. Pulmonary sclerosis, however, was observed in 57% of the heavy smokers. Pulmonary sclerosis caused by excessive tobacco smoking should be classified among the nonoccupational pneumoconioses, which include all types of pulmonary fibrosis produced by the sclerogenous action of smoke and dust outside of an industrial environment.

Spontaneous Remission in Pernicious Anemia: Report of a Case. K. R. Tanaka and G. O. Clifford. New England J. Med. 258:7-12 (Jan. 2) 1958 [Boston].

Investigation of the record of a 48-year-old woman who, in October, 1956, was admitted to a Detroit hospital because of progressive increase in the size of her abdomen and swelling of her lower extremities revealed that in 1947 she had been treated for Addison's pernicious anemia. The diagnosis of pernicious anemia seemed warranted by the finding of pancytopenia with macrocytic anemia, a megaloblastic bone marrow, gastric achlorhydria, and a characteristic and complete response to refined liver extract. It is unfortunate that intrinsic-factor activity was not assayed in 1947. In the absence of such tests it must be acknowledged that certain other causes of megaloblastic anemia must be considered, but the author shows that these could be ruled out. In 1956, 9 years after the demonstration of pernicious anemia, repeated measurement of the intrinsic-factor activity by the Schilling test revealed adequate amounts of this substance. It is suggested that intrinsic-factor activity, though absent for a long time in some persons, may not necessarily be permanently absent. The authors believe that, in any large group of patients with Addison's pernicious anemia receiving lifelong therapy, an occasional patient similar to the one presented may spontaneously regain intrinsic-factor activity so that therapy is no longer necessary. A long-term survey is now in progress to determine this possibility.

Systemic Scleroderma with Portal Hypertension. R. J. Calvert, B. Barling, M. Sopher and M. Feiwel. Brit. M. J. 2:22-25 (Jan. 4) 1958 [London].

The authors report 2 cases of systemic scleroderma associated with hepatic fibrosis, one in a 31-year-old woman and one in a 53-year-old woman. The salient feature in both patients was portal hypertension resulting in esophageal varices which led to recurrent hematemesis, an aspect apparently not previously described. The younger patient survived a palliative subcardiac portoazygos disconnection by gastric transection combined with splenectomy and was well 5 years later with no subsequent hematemesis. The second patient, whose illness was further complicated by a combination of sclerodermatous hemorrhagic colitis and steatorrhea, was treated conservatively for recurrent hematemesis and melena. After prolonged invalidism, she died in coma as a result of hemorrhage from an esophageal varix 20 months after her first episode of hematemesis.

The hepatic fibrosis observed at operation in the first patient defies ready explanation, since there was no evidence of malnutrition, previous hepatic or biliary disease, generalized passive venous congestion, small intestinal defect, or ulcerative colitis. Though not subject to proof, it may have been a direct manifestation of the viscerosclerodermatous process. Microscopic examination of the operative splenic specimen in the first patient and examination of the spleen of the second patient at autopsy revealed congestive splenomegaly. Hepatosplenomegaly associated with scleroderma has been reported by other workers. Occasional hepatic fibrosis is a recognized sequel of congestive hepatomegaly from cardiac and pulmonary scleroderma and might also be expected to occur in some patients with sclerodermatous hemorrhagic colitis, especially if there is concomitant steatorrhea, as occurred in the second patient. It is, however, admitted that the hepatic fibrosis and its complications in both patients might have been independent of the scleromatous process. The possibility of the presence of esophageal varices, as observed in these patients, should be entertained in the course of the standard radiologic studies of visceral scleroderma.

Boeck's Sarcoid in Two Brothers. H. Waagø. Nord. med. 58:1494-1495 (Oct. 3) 1957 (In Norwegian) [Stockholm].

Boeck's sarcoid appeared at the same time in 2 brothers, aged 43 and 37 years, who lived near each other. The author suggests that, since Boeck's sarcoid may occur without any symptoms, a more systematic search among the relatives of patients with the disease may reveal a greater frequency of Boeck's sarcoid than hitherto known.

Oral Treatment of Diabetes: Primary and Late Results in Material of 200 Cases. Å. Edlén, L. Hermansson and S. Strandquist. Nord. med. 1659-1662 (Oct. 31) 1957 (In Swedish) [Stockholm].

Of 200 patients orally treated for diabetes together with a restricted carbohydrate diet, 120 had previously been treated with insulin. Carbutamide (BZ-55) was given in 160 cases and D-860 in 40; no special difference in result was noted. The average age of the men was 62 and of the women, 65. One hundred sixty patients were observed for 6 to 14 months, and of the rest only 5 were observed for less than 2 months. Only 38 had had diabetes for less than 1 year. In 58 of the 77 men and in 97 of the 123 women the primary reaction to orally administered treatment was favorable. The shorter the duration of the diabetes, the better the primary result, but a good result is not excluded even in patients with diabetes of long standing. Previous insulin treatment does not exclude a good result of orally given treatment, but the absence of insulin treatment substantially improves the possibilities. An insulin requirement of a dose of more than 40 international units is considered prognostically unfavorable in judging the possibility of successful tablet treatment. Complications of treatment were observed in 13 cases. Hypoglycemic symptoms, seen in 8 patients, disappeared on decreased tablet dosage. After a shorter or longer time some patients responded increasingly less well to the orally given treatment. No external cause for the lessened effect could be found. In nearly all of these patients increased dosage, change of preparations, and stricter diet were without avail. After orally given treatment for 2 to 12 months, it had to be replaced with insulin therapy in 28 patients, of whom 23 had had insulin treatment previously.

SURGERY

Malignant Lymphoma of the Thyroid. J. W. Welch, V. E. Chesky and C. A. Hellwig. Surg. Gynec. & Obst. 106:70-76 (Jan.) 1958 [Chicago].

The material for this study was obtained from 215 cases of malignant neoplasms of the thyroid removed surgically and examined microscopically at the Hertzler Clinic in the 15-year period between 1940 and 1955. Four of these cases proved to be sarcoma originating in the thyroid gland, an incidence of 1.8%. The 5th case presented all the clinical features and followed a typical clinical course of thyroid lymphoma but proved to be a nodular goiter with leukemic infiltration of the thyroid. Four of the 5 patients were operated on, and in the 5th patient a specimen was obtained at autopsy. All except the 2 most recent patients died within the 5-month period after surgery and irradiation treatment. The last 2 patients received roentgen therapy after surgery with dramatic relief and are at present clinically well. The authors also review data on 76 cases collected from the literature of the past 30 years. The signs and symptoms of this disease have been constant enough to present a syndrome. The patients were predominantly elderly women (average age 60 years) who developed rapid enlargement of the neck, with or without preexisting goiter, accompanied by a tight feeling in the neck with dyspnea, dysphagia, weakness, weight loss, and often hoarseness. After thyroidectomy and x-ray therapy, the patients experienced marked relief of symptoms and became clinically well for a brief period, but then the disease followed a rapidly fatal course within 4 to 6 months. The authors call attention to the difficulty of distinguishing thyroid sarcoma. Such features as a diffuse, single-cell infiltration versus a sheet-like cell arrangement, absence or presence of reticulum, and the occurrence of or lack of intimal infiltration aid the pathologist in distinguishing round-cell carcinoma and lymphosarcoma, but ultimately it becomes a matter of judgment and experience in pathological interpretation. The decision as to whether a thyroid is invaded by lymphoma primarily or secondarily is again a matter of judgment based on clinical history and gross pathology, as well as on the microscopic findings. There are no clear-cut, infallible criteria for classification of these tumors. Distinguishing struma lymphomatosa from lymphosarcoma is no problem for the trained microscopist, but the question of whether the lymphosarcoma originates in the struma lymphomatosa is again controversial. The coexistence of lymphosarcoma and struma lymphomatosa is not infrequently mentioned in the literature; there were 2 such cases in this series. It is believed that primary thyroid lymphoma arises from preexisting lymphoid tissue present in the gland as a result of inflammation.

Secondary Haemorrhage Complicating Gastrectomy. J. Littler. Brit. J. Surg. 45:277-280 (Nov.) 1957 [Bristol].

The development of ulceration in the region of the stoma after gastrectomy of the Polya type has been performed may be surprisingly early and may produce bleeding before the patient leaves the hospital. In the 3 patients described, repeated serious episodes of bleeding, occurring 10-20 days after partial gastrectomy was done, were preceded by a well-defined chain of symptoms and signs. The bleeding in these patients probably was a secondary hemorrhage. A possible explanation of its cause lies in the development of sepsis in and around the gastrojejunostomy suture line, with the production of submucous abscesses and consequent erosion of thrombus and of blood-vessel walls in the vicinity by proteolytic ferments. In 1 of the 3 patients it was likely that a perigastric abscess developed, and this may have played a major part in the causation of the bleeding. These patients were repeatedly placed in jeopardy by profuse hemorrhages and were only saved by energetic treatment. In none of these patients was exploration of the abdomen undertaken during the bleeding phase, though it was seriously considered in 2. These patients could not have derived any benefit from an operation, since the surgeon would have been obliged to take down a recently fashioned anastomosis and would probably have been faced with a gross degree of sepsis in the submucous coats of the stomach or jejunum or both in a patient in a poor condition. The only chance of survival for these patients seems to be careful watching, particularly of temperature and systolic blood pressure. It is important to realize that serious bleeding may occur and yet not appear as a hematemesis in these cases.

The use of broad-spectrum antibiotics and sulfonamides is necessary because the nature of the infecting organism is not known. Antibiotics and sulfonamides were not given as early as they might have been because the gravity of the situation was not realized until serious hemorrhages had occurred. These patients are best treated with an indwelling Ryle's tube. The stomach contents should be aspirated every hour, since the appearance of fresh blood in the syringe will often be the first warning of another massive hemorrhage, and resuscitative measures can be taken at once. A small, measured quantity of water can be given orally each hour, but the main fluid intake must be by the intravenous route. Morphine should be prescribed liberally to allay the acute anxiety engendered in the mind of the patient by repeated episodes of serious bleeding. Large quantities of compatible blood must be available. Two of the patients reported on received 20 pints of blood during the bleeding phase. The prognosis is good if the patient can be kept alive by the use of chemotherapy, antibiotics, and transfusions when necessary until the infection has been overcome. The 3 patients made satisfactory progress and remained free from further complications.

Experiences with Arterial Grafting for Major Arterial Occlusive Disease. H. R. Butcher Jr. and J. R. Robinson. Am. J. Surg. 95:25-30 (Jan.) 1958 [New York].

The authors performed arterial reconstitutions in 45 men and 15 women between 31 and 80 years of age. Twenty-six of the 60 patients had aortic bifurcation homografts implanted, and 34 had femoral artery grafts. Nineteen of the 26 patients had symptomatic arteriosclerotic occlusion, 6 had abdominal aneurysm, and 1 had an unrecognized dissecting aneurysm. Five of the 26 patients died postoperatively, 4 had late thrombosis of the grafted vessel, and 2 died of vascular disease in the course of follow-up. The remaining 15 of the 26 patients were alive with open grafts, but only 12 of these were significantly benefited from their operations.

The group of 34 patients underwent grafting operations for correction of blood-flow deficiencies associated with occlusions of the iliofemoral arterial system below the bifurcation of the common iliac and above the distal popliteal arteries. Nineteen of the 34 patients had femoral artery homografts implanted; postoperative thrombosis of the graft occurred in 7, 5 had serious later complications, and 7 had patent, fuctioning grafts. Equine carotid arterial heterografts treated by controlled peptic proteolysis were used in the remaining 16 patients of this group; postoperative thrombosis of the graft and early graft failures occurred in 7 patients, and late complications, such as graft failures, thrombosis of graft, and formation of aneurysm in the graft, occurred in the other 9 patients. The use of this type of graft in man is contraindicated.

Surgical Management of Chronic Ulcerative Colitis. W. S. Carpenter and P. J. Connolly. A. M. A. Arch. Surg. 76:13-19 (Jan.) 1958 [Chicago].

Although medical treatment, in some patients combined with psychotherapy, has been effective in controlling chronic ulcerative colitis in 50% to 80% of patients, in others some form of surgery has been necessary to eradicate the disease. During the past 7 years the authors treated surgically 33 such patients. In the fulminating form of colitis, the procedure of choice is colectomy to the low sigmoid with ileostomy. In elective cases with diffuse disease, the one-stage proctocolectomy is preferred. In segmental disease a less extensive procedure may suffice. Three of the 33 patients are now dead. One was a man who had abdominal carcinomatosis when first seen. The second, seen post partum, was a 21-year-old woman who had a fulminating attack when an ileostomy was performed. Thrombosis of the aorta developed 11 days after operation. The third was a 22-year-old woman who had been in the fulminating toxic phase, with a temperature reaching as high as 105 F (40.5 C), for 2 months and who had been treated with corticotropin and cortisone for 4 weeks before operation. Among the 30 patients who were subjected to colectomy, there was 1 death.

One or more complications directly related to the surgical intervention occurred in 11 patients. The major problem was stenosis of the ileostomy, both early and late. Despite all precautions, the incidence of stenosis was high. Only 17 of 28 patients surviving the ileostomy had no trouble with the ileostomy. In 1 patient multiple furuncles developed about the site of ileostomy several months after operation. The other 10 patients had stenosis requiring revision. Seven patients had a single revision, but the other 3 had up to 6 revisions. In spite of the ileostomy problems, however, the end-results of total colectomy for ulcerative colitis were gratifying. Physical improvement was demonstrated by gain in weight in nearly all of the patients. The results from the social standpoint were as good. All survivors, except one with a mental disease, returned to normal physical activities, which included bowling, golf, dancing, swimming, horseback riding, and water skiing. The economic improvement is demonstrated by the fact that nearly all patients returned to the same occupation as before surgery. The improvement in the mental symptoms was remarkable in many patients.

The Results of Treatment of Slipped Femoral Epiphysis. J. E. Hall. J. Bone & Joint Surg. 39-B: 659-673 (Nov.) 1957 [London].

In 1950, a subcommittee of the British Orthopaedic Association was formed for the study of slipped femoral epiphysis. Drawn from many centers, the material is heterogeneous and represents a random sample of the results in the United Kingdom in recent years. In 35 of the 138 patients reviewed both hips were involved, a total of 173 hips. In 82.8% of the patients, more than 4 years had elapsed since the beginning of the treatment Shepherd's method of assessing the results of arthroplasty operations was adapted. Satisfactory results were found in 77.9% of all patients. The value of straight longitudinal traction is questioned Medial rotation appears to be an essential step in the reduction of the deformity. Manipulation was found to be a relatively safe and effective method of reducing the deformity in patients seen soon after an acute episode and should be reserved for them. Complications were common after nailing operations and included subtrochanteric fracture in 3 cases.

Smith-Petersen nails or other large trifin nails were used on 84 occasions, 36 times after cervical osteotomy and 48 times either as primary treatment or after a period of traction or a manipulation. The results were generally satisfactory, but complications were found in a surprisingly large number of patients. In the cases of nailing without any direct attack on the femoral neck, there were 5 examples of avascular necrosis. In each of these cases some other factor must share responsibility with the Smith-Petersen nail. It may be that the added trauma of driving a large nail into the femoral head may be enough to abolish completely an already precarious blood supply. Moore's pins or other slender multiple pins were as effective as Smith-Petersen nails in preventing slipping or maintaining reduction, and their use was seldom followed by complications. They were employed 20 times with no complication except erosion of 2 pins. However, the patients treated with Moore's pins were under observation for an average of only 21.6 months, compared with 67.7 months for those treated with Smith-Petersen nails. It may be that avascular necrosis will eventually be evident in some of these patients, 8 of whom had had successful manipulations. Avascular necrosis was the commonest cause of a poor result. It was found in 37% of cases in which a manipulation was followed by a nailing operation and in 16 of 42 patients subjected to cervical osteotomy.

Clinical Experiences with Pheochromocytoma. E. M. Lance, W. B. Cate Jr., G. W. Liddle and H. W. Scott Jr. Surg. Gynec. & Obst. 106:25-37 (Jan.) 1958 [Chicago].

Twelve instances of pheochromocytoma have been recorded in the past 4 years at the hospitals of Vanderbilt University in Nashville, Tenn. The incidence has been variously determined at 0.4 to 2% of all hypertensive patients, but some investigators believe the actual incidence to be higher. These patients have potentially curable hypertension, and failure to recognize and treat their disease is lamentable. This report is concerned with 9 of the 12 patients. A higher index of suspicion, with a more efficient use of diagnostic aids, is necessary if the cure rate of this group of potentially curable hypertensive patients is to be raised. The manifestations are paroxysmal in nature, but this may be expected in only slightly more than 50% of the patients. Hypermetabolism is usually, but not necessarily, clinically apparent. Indirect pharmacological tests aimed at altering the effects of the circulating vasopressor substances produced by the tumor have been the principal methods of confirming the clinical diagnosis since 1945. Estimation of urinary catechol amines should supplement and may eventually supersede the indirect tests in confirming the clinical diagnosis, since the direct method is safe and is potentially more accurate. Pheochromocytoma is a treacherous tumor. In untreated patients death usually results from cerebral hemorrhage, myocardial infarction, or pulmonary edema. Surgical treatment should not be delayed.

There have been no deaths in the present series when definitive surgery for preoperatively recognized pheochromocytoma has been carried out. The authors believe that the reported operative mortality rate of 15 to 20% will be lowered in the future. Reports indicate a 50% mortality rate in patients who harbor a pheochromocytoma and are subjected to unrelated major surgical procedures. The surgical treatment of pheochromocytoma should, therefore, take precedence over the treatment of other coexisting conditions except in emergencies. Anesthesia must permit rapid induction, adequate oxygenation, and relaxation with minimal vasomotor alterations. These aims can be accomplished by sodium pentothal induction with nitrous oxide, ether, and oxygen maintenance. The surgical approach providing best exposure of the tumor is a thoracoabdominal one. When the location of the tumor is not known with certainty, an initial abdominal incision should be planned so as to permit its conversion into a thoracoabdominal exposure after the tumor has been localized and the search for multiple foci of tumor formation completed. Gentle handling of the tumor during its removal and the availability and intelligent use of blood pressure regulating drugs are essential.

Treatment of Fractures of the Os Calcis. M. H. Leonard. A. M. A. Arch. Surg. 75:990-997 (Dec.) 1957 [Chicago].

Thorough roentgenography is essential in fractures of the heel bone (os calcis). An anteroposterior view of the ankle will demonstrate the possible piling up of bone of the os calcis under the fibular malleolus. Other exposures are a lateral view of the ankle and foot, an anteroposterior view of the foot to demonstrate possible involvement of the calcaneocuboid joint, and an axial view of the heel. The axial view presents the greatest difficulty in that the central ray must pass tangentially through the subastragalar joint. This can be done either with the patient standing and the central ray passing from the back of the heel toward the sole or with the patient recumbent and the central ray passing from the sole to the back of the heel. Mild fragmentation of the tuber of the os calcis without joint involvement can be treated by brief plaster immobilization. The usual routine with patients who do not require operative intervention is to immobilize the foot and ankle in a short-leg cast for 3 to 6 weeks, followed by non-weight-bearing, mobilizing activities and then free weight-bearing in a shoe which is appropriately padded. Fractures which involve the posterior subastragalar joint with minimal displacement are also treated in that manner. Fractures with severe involvement of the posterior subastragalar joint cause prolonged disability. Three common methods for this fracture are early mobilization, the method of Boehler (or a variation thereof), and early arthrodesis. These methods, even without triple arthrodesis, eventually result in a satisfactory foot. However, union requires about 18 months, and until it occurs the patient has great disability. The foot frequently remains deformed, with no arch and a broadened heel.

Open reduction of certain fractures of the os calcis can shorten the disability and may result in a foot almost normal in both function and appearance. The author has obtained best results with modification of Palmar's technique of open reduction. He places a Kirschner wire through the tuber of the os calcis. The incision is of a short Kocher type. Further dissection reveals the peroneal tendons, which are reflected with their sheaths anteriorly. Due respect must be paid to the sural nerve, which runs almost in a line of the incision and which is carefully retracted. It is necessary to cut the calcaneofibular and anterior talofibular ligaments to obtain ingress to the posterior subastragalar joint. The usual finding here is that the facet of the posterior subastragalar joint is in 2 pieces and that the lateral piece is depressed. An elevator is placed through the aperture made by the buckling of the lateral wall of the os calcis under the depressed portion, while traction is being maintained on the heel via the Kirschner wire. The depressed portion of the posterior facet of the os calcis is elevated, and position is maintained by a bone graft placed in the resulting defect. If the articular surface itself is comminuted, elevation of the fragments permits earlier fibrous fusion and shorter disability. A long-leg plaster cast, with the knee at 45 degrees to relax the gastrocnemius muscle, is applied. After 6 weeks it is cut down into a short-leg cast so that the patient may start knee motion. The patient wears this short-leg cast an additional 6 weeks. Weight-bearing is not permitted until the graft has revascularized sufficiently, as indicated by homogeneity of the trabecular pattern on roentgenologic examination. Triple arthrodesis has proved unnecessary with this form of treatment.

Bilateral Pheochromocytoma. R. H. Flandreau and A. S. Glushien. A. M. A. Arch. Surg. 76:62-66 (Jan.) 1958 [Chicago].

The authors describe observations on a 37-year-old man who was believed to have a chronic glomerulonephritis with secondary hypertension and was treated with the Kempner rice diet and reserpine. After 3 weeks, postprandial epigastric pain and melena developed. A clinical and roentgenographic diagnosis of duodenal ulcer was made, and, because of persistent hemorrhage, laparotomy was considered. The record immediately prior to the operation disclosed findings suggestive of pheochromocytoma, namely, repeated episodes of profuse perspiration, unexplained low-grade fever, hyperglycemia, glycosuria, and variation of blood pressure between 140 and 260 mm. Hg systolic and 90 and 150 mm. Hg diastolic. Examination revealed both postural hypotension and postural tachycardia. Bilateral adrenal pheochromocytomas were found at operation and excised. Both adrenals were so extensively involved by tumor as to require removal in toto, leaving no apparent adrenal tissue. The blood pressure fell slightly during the initial (right) adrenalectomy but dropped precipitously with the interruption of the left adrenal vein. Restoration of normotensive levels was temporarily effected by the intravenous administration of levarterenol (Levophed) bitartrate, Phenylephrine (Neo-Synephrine) hydrochloride, and hydrocortisone. An acute peptic ulcer of the posterior duodenal wall was oversewn.

Despite the administration of hydrocortisone, adrenal cortical extract, desoxycorticosterone acetate, and vasopressor agents in customary doses, the blood pressure was not maintained at satisfactory levels. The concentration of levarterenol and phenylephrine was gradually increased until the patient was receiving these drugs undiluted. During the first 24 hours the patient received 212 mg. of levarterenol base, 2,100 mg. of phenylephrine hydrochloride, and approximately 140 cc. of epinephrine hydrochloride. The blood pressure was maintained at approximately 100/80 mm. Hg. The use of steroids and vasopressor agents in large doses was continued. The patient has been followed for 1 year since operation. The blood pressure has averaged 155/110 mm. Hg. The hemorrhages in the ocular fundi have disappeared, but a few old exudates remain. Visual acuity has improved to the extent that the patient can read small type. There has been a 60 lb. (27 kg.) weight gain. The patient has experienced mild headaches occasionally but not excessive perspiration. The abdominal complaints and melena have not recurred. Neither postural tachycardia nor postural hypotension is present. This case is believed to be the 4th instance of the successful removal of bilateral pheochromocytomas in a single operation.

Osteitis Pubis After Inguinal Herniorrhaphy. D. Le Vay and J. B. Borman. Lancet 2:1252-1255 (Dec. 21) 1957 [London].

Osteitis pubis has been generally regarded as an orthopedic complication of lower abdominal surgery and is usually the sequel, after an interval of some weeks or months, to operations on the prostate. It has been variously attributed to the effects of local trauma to this part of the pelvic girdle, to infection, and to disturbance of the local circulation. So far as the authors were able to ascertain, osteitis pubis has not previously been reported as a complication of herniorrhaphy. They present histories of 3 men, ranging in age from 32 to 49 years, in whom osteitis pubis complicated recovery from inguinal herniorrhaphy. The disease appeared within a week or two of operation and was of relatively benign type, without suppuration. The patients had completely recovered after 5 months. In the 2 patients in whom it was tried, oral treatment with cortisone was without effect on the rate of recovery. Only a combination of traumatic, vascular, and infective factors appears fully to explain the onset of this disease.

Bacteriologic and Clinical Experiences and the Methods of Control of Hospital Infections Due to Antibiotic Resistant Staphylococci. H. T. Caswell, K. M. Schreck, W. E. Burnett, E. R. Carrington and others. Surg. Gynec. & Obst. 106:1-10 (Jan.) 1958 [Chicago].

The antibiotic-resistant Micrococcus (Staphylococcus) pyogenes var. aureus has been found to be the source of infections in surgical wounds, as cutaneous infections in nurseries for the newborn, as breast abscesses in nursing mothers, in the respiratory tract as staphylococcic pneumonia, in severe types of enteritis in patients after surgical operations, and in cutaneous infections involving hospitalized patients not operated on and hospital personnel. The authors report on studies of 1 year of micrococcic infections in hospitalized patients. Specimens from patients were routinely inoculated onto the surface of 2 blood agar plates (2% trypticase soy with 8% defibrinated horse blood). Both plates were incubated overnight at 37 C, 1 plate aerobically and the other anaerobically. Nasal specimens from the hospital personnel were obtained with sterile, cotton-tipped swabs moistened in sterile saline solution. Nasal specimens from patients before operation were obtained just before anesthesia was induced. Cultures were prepared also from numerous hospital articles, such as blankets, linens, soaps, lubricating jellies, surgical instruments, suture materials, bone wax, irrigating fluid, anesthesia masks, airways, and intubation tubes. Occasional spot-check cultures were made from surgeons' hands before and after scrubbing and after various periods of operating.

Bacteriophage typing of these organisms revealed that 69% of hospital micrococcic infections were of bacteriophage type 42B/52/81. This figure compares with a 16% incidence of this bacteriophage type organism in patients admitted with micrococcic infection. Only 4.1% of 265 nasal carriers of coagulase positive micrococci among hospital personnel were infested with organisms of this bacteriophage type. Thus, nasal carriers of micrococci among hospital personnel played an insignificant role in the transmission of the organism. Efforts of control of hospital infections with M. aureus must include measures directed with equal vigor toward both airborne and direct contact routes of transmission.

Novobiocin and chloramphenicol are the only 2 systemically administered antibiotics studied by the authors to which these organisms are highly susceptible. Micrococci resistant to both of these antibiotics can and are developing as they have developed after the use of the older antibiotics. The use of novobiocin and chloramphenicol and newly introduced antibiotic agents to which micrococci are susceptible should be limited to those patients whose organisms are not susceptible to any other antibiotic or chemotherapeutic agent and whose infection cannot be controlled by other means, such as adequate surgical drainage. Infections with these antibiotic-resistant organisms do not constitute a temporary epidemic but represent a problem which must be faced for an indefinite period in our antibiotic-saturated hospital society. Infected hospital personnel play a dominant role in the transmission of these organisms. The role of the healthy nasal carrier is equivocal. Control of these hospital micrococci cannot be attained by the discovery of additional antibiotics, because resistance to these new agents will probably develop as it has to the ones previously employed. Control must be predicated on a return to strict sterile techniques combined with intelligent limitation of the use of antibiotic agents.

Behavior of Skin Switch Homografts Between Parents and Infants. L. A. Peer, W. G. Bernhard, J. C. Walker and others. Plast. & Reconstruct. Surg. 20:273-280 (Oct.) 1957 [Baltimore].

Although it has been assumed that the tissues of the young infant behave differently from those of the embryo, it seemed possible that this change might not be a sudden one and that the injection of whole blood from a parent might render the infant tolerant to tissues from the same parent. A male infant, 3 weeks old, was cross-matched with both parents, and 2 cc. of whole blood from the mother was injected intramuscularly into the child's buttock. Both mother and child were of blood group O, positive Rh factor. Sixty-nine days later, during repair of the child's cleft lip, a full-thickness segment of skin was excised from behind the right ear. Then a full-thickness skin graft was removed from a similar area in the mother and transplanted to the child. This graft behaved like a successful autograft for 8 months, at which time it was removed with some of the surrounding skin and examined microscopically. There were normal epidermal cells and hair follicles, but the dermis of the homograft was densely infiltrated by lymphocytes. The adjacent child's skin was entirely free of this lymphocytic infiltration and contained many more blood vessels. A specimen from this same homograft had been removed for biopsy 20 days after transplantation. The epidermal cells in both the 20-day and the 8-month biopsy section demonstrated the characteristic sex chromatin which is characteristic of female skin. Since the transfer was from mother to child, the skin was the mother's rather than replacement skin from the male infant.

Thirteen additional infants have been injected intramuscularly with 4 cc. of whole blood from parents with compatible blood groups. The age of the infants at the time of injection varied from 3 to 28 days, and the time interval between blood injections and skin transplantations ranged from 40 to 75 days. Full-thickness skin-switch homografts were transplanted from parents to infants, and vice versa, in 11 cases. In the remaining 2 cases the transplantation was only from parents to infants. Three skin switches were with fathers, 1 with grandfather, and the remaining 9 between mother and child. Long-surviving skin homografts occurred only in transfers between mothers and boy or girl infants, regardless of whether the infants had received blood injections from their mothers. No long-surviving skin homografts occurred when skin was interchanged between fathers and boy or girl infants, regardless of whether the infant had received an injection of its father's blood. It seems evident that the mother of a severely burned child should be used as the skin donor instead of the father, other members of the family, or friends. Likewise, blood transfusions from mother to child seem preferable to those from the father or unrelated donors.

The longer survival of some skin homografts from mother to child, rather than from father to child, suggests that tolerance between mother and child may occur because of intermingling of fetal and maternal circulations during pregnancy. The early rejection of grafts interchanged between mother and child, which occurred in about 70% of the cases, may possibly be explained by a more complete separation of maternal and fetal circulations during the pregnancies of these mothers. The clinical possibility of artificially producing an exchange of blood elements between fetus and mother when the Rh factors are compatible is fascinating. Fetal blood elements in large quantities may sensitize a mother to her child's skin instead of rendering her tolerant. A series of skin exchanges between mothers and older children are being carried out to ascertain whether tolerance to the mother's skin may decrease as the child's age increases. An exchange of skin grafts between a mother and her 12-year-old son resulted in survival of both grafts up until the present time (120 days). Children who are tolerant to their mothers' skin may also tolerate other tissues from their mothers, and skin exchanges may prove to be useful tests to determine this.

NEUROLOGY & PSYCHIATRY

Treatment of Pituitary Adenomas: Surgery Versus Radiation. G. Horrax. A. M. A. Arch. Neurol. & Psychiat. 79:1-6 (Jan.) 1958 [Chicago].

Earlier in the century the only known treatment capable of reducing the size of pituitary adenoma and, thus, relieving the pressure on the optic nerves with the restoration of vision was the operative removal of varying amounts of the growth. This was accomplished by the transsphenoidal procedure, with an immediate operative mortality of 4 to 5% and a 5-year mortality from recurrence of 20 to 32%. Because of the high recurrence mortality rate, the intracranial operation, with which the 5-year recurrence mortality rate was less than 10%, gained favor despite the immediate mortality rate of 12 to 14% attendant on this procedure. X-ray treatment utilized as a surgical adjunct resulted in many more patients remaining free from recurrence for longer periods than those who had not been given such treatment. X-ray treatment as sole therapy was disappointing, in that not more than 20-25% of patients showed adequate improvement or maintained vision at a useful level and in not a few instances patients finally came to be operated on after a prolonged trial of radiation therapy when vision was so greatly reduced that they were not benefited by surgical removal of the adenoma. Prior to 1950, when a tumor radiation dose did not exceed 2,000-2,500 r, 58.5% of the patients so treated had to be operated on because vision continued to deteriorate. Since 1950, when a tumor dose of 4,000 r by the rotational method with the 2-million volt apparatus was given, only 18.4% eventually required operation within the 5-year follow-up period.

Of 54 patients operated on without previous or subsequent radiation therapy, 42 survived the operation. Thirty-seven of this group have been followed up from 1 to 20 years, with an average survival of 7.8 years and an average improvement period of 6.1 years. Twenty-eight of the 37 have lived from 5 to 20 years, and 23 have maintained their improvement for these periods. In the group with surgery after radiation therapy, 56 of 61 survived the operation. All 56 lived for a few months to 20 years, or an average of 7.1 years, and maintained improvement for an average of 6.5 years. Forty-six of the 56 lived from 5 to 20 years, 44 maintaining improvement for these periods. The group receiving radiation therapy after surgery consisted of 25 patients. All but 1 have been followed for 1 to 16 years, and they have lived an average of 8.2 years and maintained improvement for an average of 7.2 years. Twenty-two have lived from 5 to 16 years, and 18 have maintained their improvement for the same length of time. In the group receiving radiation therapy only prior to 1950, 89 patients were treated for visual loss, of which 56 (62.9%) were operated on subsequently because vision was not held at a useful level. In the 1950-1955 period, 66 patients with visual loss received primary irradiation therapy with the 2-million volt apparatus by the rotational method. Thus far, only 8 (12.1%) have had to be operated on.

Convulsive Seizures Following Administration of Chlorpromazine (Thorazine). M. J. Gunter. Ohio M. J. 54:51 (Jan.) 1958 [Columbus].

Chlorpromazine has been used extensively in treatment of epileptic patients. Some workers have reported a decreased frequency of seizures, while others have reported an increased number of seizures due to this drug. The author, who has used this drug for 4 years in a psychiatric outpatient department, observed 2 patients in whom grand mal convulsions were ascribed to its use. One occurred in a patient after a period of administration of gradually increasing doses up to a relatively high level. The other occurred in an individual who had had only occasional, small doses and in whom a convulsion occurred after taking only 1 small dose of the drug. Neither of these 2 patients had a history of epilepsy.

Intracranial Metastases. T. Dalsgaard-Nielsen and B. de F. Olivarius. Nord. med. 58:1573-1776 (Oct. 17) 1957 (In Danish) [Stockholm].

Data are reported on 31 verified cases of cerebral metastatic tumors in 16 men and 15 women, aged mainly between 40 and 70 years. Intracranial metastases should be strongly suspected when a patient with or without history of primary tumor develops increasing headache and other signs of increased intracranial pressure simultaneously with psychic symptoms and scattered pareses of cranial nerves and/or extremities, particularly when combined with loss of weight, poor general condition, and increased sedimentation reaction. Papilledema was seen in only one-third of the patients. The two main localizations of the primary tumor were in the lung in men and in the breast in women. When the primary tumor is latent, diagnosis is difficult. The duration of history of cerebral disorder before admission varied in these cases from 1 hour to 12 months; the average duration was 2 months. The average length of life from the appearance of the symptoms of metastases was 5.1 months for the patients with pulmonary cancer and 7.1 months for those with cancer of the breast. In 40 to 50% of the patients with cerebral metastases, information about a primary tumor cannot be expected. Roentgenographic examination of lungs and mammae is advised. To narrow down the number of patients with primary tumors not recognized, prophylactic mass examinations will be valuable. The prognosis for patients with recognized and treated primary tumor is not better, largely because of a recognition too late of the cerebral symptoms as the expression of metastases. Only close clinical control, especially of the patients treated for tumors with known affinity for the cerebrum, can lead to diagnosis and better possibilities for treatment.

Neurologic Syndromes of Malignant Tumors: I. Neuropathies Associated with Cancer. D. Furtado. Arq. pat. 29:173-197 (July) 1957 (In Portuguese) [Palhava, Lisboa].

The author observed several hundred patients with neurological symptoms due to diffuse malignant tumors at the Instituto Portugues de Oncologia at Lisbon. There is a group of neuropathies with accompany of complicate cancer and are of value in an early diagnosis of cancer. Sensitive (peripheral) and sensory-motor neuropathies and myopathic pseudomyasthenia are always associated with bronchopulmonary cancer. Funicular myelosis is associated with gastric cancer, and cerebellar neuropathy is associated with cancer in any of the various structures. Sensitive (peripheral) neuropathy appears months and even years before the symptoms of bronchopulmonary cancer. After appearance of the neuropathy, the patient develops a chronic bronchitis. The neurological symptoms consist of painful paresthesia and burning sensations of the legs and appearance of the so-called syndrome of burning feet. The neuropathy follows a long course, with periods of improvement alternating with moderate exacerbation. The course of the neuropathy is independent of the course of the cancer and the production of metastases, even if the metastases are localized in the central nervous system. The clinical diagnosis is verified by roentgenographic examination of the chest. Early removal of the tumor results in a complete recovery, with disappearance of the neuropathic symptoms. The anatomicopathological features of the neuropathy consist of marked demyelinization of the spinal ganglions and moderate demyelinization of the roots and of the posterior columns of the spinal cord. Sensory-motor neuropathy appears late in the course of bronchopulmonary cancer when the latter cancer is diffuse and in a very advanced stage. It is frequently associated with either funicular myelosis of myopatic pseudomyasthenia. Funicular myelosis appears early in patients with cancer of the stomach. The patients complain of gastric disorders and show a marked weakness in walking. Gastric tests always show marked achylia, which seems to be the causal factor of funicular myelosis. The clinical diagnosis of cancer of the stomach is confirmed by the roentgenographic examination of the stomach. Gastrectomy results in disappearance of the neuropathy. The anatomicopathological features consist of demyelinization of the myeline sheath and neurolytic tumefaction of the axis cylinder. Myopatic pseudomyasthenia is a muscular disorder complicating the late stages of bronchopulmonary cancer. The clinical symptoms and the anatomicopathological features are those of progressive muscular dystrophy and myasthenia. Cerebellar neuropathy appears as a final complication of cancer of the breast, the lung, the uterus, the ovaries, and other structures, with spread of the disease. The symptoms and anatomicopathological features correspond to those caused by atrophy of the cerebellum. Neuropathies that develop in association with cancer are due neither to the cancer nor to the metastases. Both carcinogenesis and the neuropathies are the result of the action of an unknown factor, probably a virus which first gives origin to the tumor, travels from it through the nerves to reach the central nervous system, and gives origin to the neuropathy.

PEDIATRICS

Histiocytoma of the Bronchus: Report of a Case in a Six-Year-Old Child. T. Bates and O. H. Hull. A. M. A. J. Dis. Child. 95:53-56 (Jan.) 1958 [Chicago].

A 6-year-old boy had had pneumonia 3 weeks before examination, and he complained of persistent cough. The past history was significant in that he had had pneumonia at the age of 4 years. Both lung fields contained scattered medium moist rales. There were no other abnormal physical findings. Fluoroscopic examination showed opacity of the lower portion of the right lower lobe. A diagnosis of pneumonia, etiology undetermined, was made. He was treated with bed rest and chlortetracycline and seemed to recover completely. Reexamination by fluoroscope showed a narrow area of persistent opacity lateral to the right cardiac border. Several weeks later the boy had a paroxysm of coughing after eating. The cough persisted, and 2 days later he had a temperature of 104 F (40 C), red bulging tympanic membranes, and dullness at the right lung base. Bed rest and chlortetracycline therapy were resumed. After 8 days of treatment, with symptoms and signs unchanged, roentgenographic examination revealed an apparent atelectasis of the right middle lobe of the lung, possible atelectasis of the anterior segment of the right lower lobe, compensatory emphysema in the remainder of the right lung field, and pleural effusion or thickened pleura at the right base. A tuberculin patch test showed no reaction. The impression was that an occlusion of the right main stem bronchus existed and that this was due to either a bronchial tumor or a foreign body.

Bronchoscopy showed a tumor obstructing the lower right main bronchus. It was firm and slightly lobulated and bled slightly when the largest portion was removed with a forceps. The preliminary report of the pathologist stated that the tumor was "anaplastic and infiltrative." A subsequent report stated, "Bronchus infiltrated by masses of large reticuloendothelial cells, suggestive of endothelioma or reticuloendotheliosis." Bone marrow studies showed no reticuloendothelial infiltration. At operation no tumor could be palpated in the lung, bronchi, or mediastinum. The right main stem bronchus was opened, and a small tumor was seen 1 cm. below the carina. Examination of a frozen section of tissue from the tumor resulted in a diagnosis of "anaplastic squamous cell carcinoma of the lung." A right pneumonectomy was done. The patient tolerated the operation well. In later years the boy had difficulty with frequent respiratory infections, and his physical activities were somewhat limited. He died at age 11 after a fulminating pneumonia. The tumor was composed of cells which histologically were histiocytes. Histiocytes or fixed macrophages are cells found in the loose connective tissues of the body that are capable of taking up particulate matter and storing foreign substances brought to them in colloidal solution. Under the stimulus of inflammation new histiocytes develop by mitotic division of the preexisting macrophages, by direct assumption of phagocytic activity by mesenchymal cells, and by hypertrophy and development of lymphocytes and monocytes. On the microscopic evidence alone the tumor was identified as an histiocytoma. The authors consider this tumor to be benign. They found no previous report of a histiocytoma of the bronchus in childhood.

Prevalence of Heart Disease in Relation to Some Population Characteristics of Colorado School Children. H. J. Dodge, G. J. Maresh and N. M. Morris. Am. J. Pub. Health. 48:62-70 (Jan.) 1958 [Albany, N. Y.].

This study is concerned with the prevalence of heart disease in 10,948 children enrolled in the 6th grade of schools in 41 Colorado counties during the period 1949-1951. This group included 2,010 Spanish-American and 8,938 Anglo-American children. Other ethnic groups were too small in number for consideration. The over-all or general prevalence ratio for clinically definite heart disease was 9.6 per 1,000 children examined. This figure was made up of 6.8 cases of rheumatic heart disease and 2.8 cases of congenital heart disease per 1,000. The most striking finding was the difference in heart disease prevalence between the 2 major ethnic groups The Spanish-American children had a general prevalence ratio of 13.9 cases per 1,000, as contrasted with 8.6 for the Anglo-Americans. The difference was more conspicuous for rheumatic heart disease than for congenital heart disease. Spanish females had somewhat more heart disease than males, but the reverse was seen in the Anglo-American children. It is shown that the prevalence of rheumatic and congenital heart disease is greater among rural than urban dwellers in Colorado, and, though the data are of less reliability, there is an indication that those living in home conditions of little crowding have lesser risk of childhood types of heart disease than those who live in crowded conditions. It is felt that all of the differences in heart disease prevalence demonstrated in this study are best explained on the basis of environmental factors that are cultural or socioeconomic in nature.

Preliminary Report on Treatment of Mongoloids. C. H. Carter and M. C. Maley. J. Florida M. A. 44:709-713 (Jan.) 1958 [Jacksonville].

This report is concerned with the use of calf pituitary extract in the treatment of mongoloid children, a form of treatment that was first suggested by Benda. The initial dose has been 1 grain daily, increased at 2-week intervals until tolerance of 4 grains is reached. The powder of calf pituitary is mixed with milk or food. There has been no problem in administration or tolerance. The only untoward reaction has been hyperirritability, which disappeared when the dose was decreased. Twenty-six mongoloid children were studied with this type of therapy. The majority of these children have been under the care of their private physicians and have been followed by the authors with special attention to mental and physical development over long periods of time. In several of these children treatment was started at 6 weeks of age, and in a number of them it was started between the ages of 2 and 8 months.

The observations presented should be interpreted only as preliminary impressions and not as completely controlled observations. Three patients appear to have developed a normal I. Q. range at the present time and have lost some of the mongoloid stigmas. In the remaining cases studied the results have varied from no real degree of I. Q. improvement to significant degree of improvement. The authors are not able to explain the results, since the majority of endocrinologists are of the opinion that orally administered pituitary extract is destroyed in the stomach. There is a uniform eosinophil response in the differential counts while treatment is being administered. This suggests absorption of calf pituitary extract. Clinical improvement observed in this preliminary study warrants continuation of this therapy and expansion of research along these lines.

Addison's Disease in Children: Report of Two Cases. R. E. Greenberg. J. Pediat. 52:54-65 (Jan.) 1958 [St. Louis].

The author reports on 2 boys with chronic adrenal insufficiency (Addison's disease), 1 of whom was first seen when 11 years old and the other at 7 years of age. Reports in the literature show that chronic adrenal insufficiency is rare in children. This is especially true of cases of primary adrenal atrophy or involution not associated with adrenal destruction by disease process or by hemorrhage or with specific abnormality in hormone synthesis. In the 2 cases reported, the usual clinical and laboratory data had to be supplemented by measurements of adrenal hormones in urine and blood before the diagnosis of Addison's disease could be established. The symptoms and signs of chronic adrenocortical insufficiency seldom suffice to certify a diagnosis. Similarly, reliance on laboratory methods that do not involve actual measurements of adrenal hormones in plasma and urine may obscure an underlying adrenal insufficiency by false-negative results. The use of the quantitative determinations of adrenal response to corticotropin (ACTH) stimulation as reflected in urinary excretion of 17-ketosteroids and 17-hydroxycorticoid levels provides the most accurate laboratory tool available for the diagnosis of Addison's disease.

In the replacement therapy of Addison's disease, it would be advantageous to be able to use agents that, with a minimum of expense and deleterious side-effects and a maximum of stability, would provide orally given replacement therapy in as physiologic a manner as possible. Cortisone, hydrocortisone, and their derivatives provide adequate glucocorticoid properties but do not supply sufficient mineralocorticoid properties in the doses required for maintenance therapy. Use of supplemental salt and desoxycorticosterone (DCA) administered parenterally (in the forms of acetate in oil, trimethylacetate, or pellets) has been necessary to create adequate mineral homeostasis. Substitution of a fluorine atom in the 9-alpha position of the hydrocortisone molecule produces a marked potentiation of glucocorticoid effect and an even greater potentiation of mineralocorticoid effect. The 9-alpha-fluorohydrocortisone provides an agent which, when used together with cortisone or hydrocortisone, promises to allow effective, safe, and relatively inexpensive oral therapy for chronic adrenal insufficiency.

Sarcoma Botryoides of the Vagina in Infancy and Childhood: A Case Report. A. W. Cavins, W. P. Meyn and G. T. Mitchell. J. Indiana M. A. **50**:1487-1496 (Nov.) 1957 [Indianapolis].

The authors present the history of a 6-month-old girl who appeared well at birth and for 6 months thereafter. Then blood was observed on the diapers. Several days later there was a great deal more bleeding, with passage of some clots. Examination of the vagina, with the patient under anesthesia, revealed bleeding from the upper vagina; in that region a few small, grape-like growths were seen. Three bits of tissue were obtained with an endoscopic biopsy forceps. The diagnosis was cervical or vaginal lesion—a possible sarcoma botryoides. The pathologist reported the biopsy as showing "mixed mesodermal tumor (sarcoma botryoides)." After a total hysterectomy and a nearly total vaginectomy to remove the tumor, the child was well at first; then she began to show general deterioration, with anorexia and evidence of extensive recurrence of the sarcoma botryoides. She died 3 months after the first operation.

Extensive metastases had developed in this patient not only by direct extension in several directions but also to the vertebral lymph nodes, the liver, and the lungs. Extensive collateral circulation developed from obstruction of the inferior vena cava. Growth of this tumor was astonishingly rapid. The authors cite investigators who believe that the primary site of botryoid sarcoma depends on the age of the patient. In infancy and childhood the vagina is the place of origin; during the years of active reproductive life, the site is the cervix; tumors of the fundus occur in the postmenopausal years. The authors emphasize that botryoid sarcoma of the vagina occurs in infants. Surgery, combined surgery and radiation, and radiation alone seem to be ineffective. Spread of the tumor is largely by direct extension. This tumor is apparently of mesenchymal origin.

OTOLARYNGOLOGY

Tympanotomy, Mobilization of the Stapes and Fenestration. G. A. Hoogland. Nederl. tijdschr. geneesk. **101**:1865-1869 (Oct. 5) 1957 (In Dutch) [Amsterdam].

The mobilization of the stapes, as reported by Kessel-Miot and rediscovered by Rosen, may produce favorable results in patients with ankylosis of the stapes (otosclerosis). The indication for this operation is more extensive than that for fenestration. The principle of the mobilization of the stapes consists in the remobilization of the stapes footplate from the fenestra ovalis to which it has become attached, while the chain of auditory ossicles is preserved. If this is accomplished, the air-conduction curve in the audiogram practically coincides with the bone conduction curve, a result superior to the hearing improvement that can be achieved by an ideal fenestration. This proves that stapes mobilization is suitable not only for patients with otosclerosis who are considered suitable for fenestration but also (1) for patients in whom otosclerosis is not sufficiently advanced to justify a fenestration, and (2) in those patients with otosclerosis in whom the function of the middle ear has been impaired to such an extent that fenestration cannot be expected to produce a satisfactory hearing improvement.

The diagnosis of otosclerosis may prove extremely difficult. In some patients it can only be stated that there is "middle-ear hardness of hearing, probably resulting from otosclerosis." The terminal states after recurrent tubal infections and healing of otitis media may produce conditions that have been summarized as "clinical otosclerosis." The patients with clinical otosclerosis include some in whom the motility of the auditory ossicles is restricted by fibrous strands or by adhesion to the fenestra rotunda. While both these conditions are amenable to surgery, they do not call for fenestration of the horizontal semicircular canal. Since it is possible to perform a fenestration after a stapes mobilization has been done, the latter intervention becomes a preliminary operation. An exploratory tympanotomy, with approach through the external auditory meatus, allows inspection of the tympanic cavity; then several procedures are possible: (1) removal of adhesions or tympanoplasty in the presence of a true ankylosis of the stapes; (2) mobilization of the stapes; and, if this fails, (3) fenestration.

Endolaryngeal Carcinoma: A Survey of 206 Cases. E. H. M. Foxen. J. Laryng. & Otol. 71:787-799 (Dec.) 1957 [London].

The boundaries of the intrinsic larynx are defined. Lesions above the free border of the ventricular band are classified with extrinsic carcinoma and are not considered in this report, which included the cases of 183 men and 23 women. The highest incidence in men was from 61 to 65 years and in women from 51 to 55 years. There is evidence that patients with hoarseness now seek medical advice earlier than formerly. The most frequently affected site is the anterior part of the vocal fold. In 166 patients in whom the histology could be classified, 79% were shown to have differentiated lesions and 21% anaplastic; the latter was found to occur more frequently among women. In 65 patients who have since died, the relative frequency of recurrence in the lymphatic tissue of the tracheoesophageal gutter was noted.

The site of the disease, mobility and histology, and their bearing on treatment and prognosis were evaluated. Mobility is of supreme importance, and lack of mobility generally constitutes an indication for surgery in operable cases. Anaplasia is not always an indication of over-all malignancy. Teleradiotherapy is the treatment of choice for patients with mobile glottic lesions. Laryngectomy with radical neck dissection is advocated in all operable tumors in the subglottic region and in those of the supraglottic region or of both sides of the larynx when there is reduction of mobility. Glottic lesions with reduction of mobility and early supraglottic and bilateral lesions with full mobility constitutes a more difficult problem in regard to choice of treatment. Laryngectomy with radical neck dissection is indicated for maximum safety in such cases, though this is often sidestepped by the policy of radiotherapy first with surgery for recurrence. This policy is fraught with danger.

THERAPEUTICS

A New Method for Treating Slow-Healing Wounds. A. B. Rosenberg. Postgrad. Med. 23:49-60 (Jan.) 1958 [Minneapolis].

The author reports on 9 patients between 57 and 83 years of age with pigmentation and stasis ulcers of varying size and varying duration up to 20 years who were treated as follows. Ten thousand fibrinolytic units of human profibrinolysin (Proactase), 150 units of hyaluronidase (Diffusin), and 5,000 units of streptokinase-streptodornase (Varidase) were reconstituted in isotonic sodium chloride solution and applied on wet compresses to the affected area. The sole function of the small amount of streptokinase used was to transform the inactive profibrinolysin into the active enzyme fibrinolysin. The compresses were covered with a light bandage and were applied daily for from a few days a week to several weeks. With a single exception the patients were at all times ambulatory and were seen at the author's office. No other medications were applied during the intervals of treatment.

The use of activated profibrinolysin with hyaluronidase resulted in the cure of 8 of the ulcers. One patient died from other causes during the course of the treatment, but the ulcer for which he was treated showed marked improvement despite excessive edema. The use of activated profibrinolysin did not produce any side-effects, such as pain, fever, necrosis, or other sequelae. The treatment was less expensive to the patient than hospital care, and the patients were free to pursue their normal occupations.

Poor blood circulation and infection of the wound area are 2 of the most important factors for the delay in wound healing. A poor blood supply due to varicosities or thrombosis deprives the area of nutrition and presents the formation of healthy granulation tissue and epithelization. Infection is responsible for the production of the exudate and epithelial debris which block the intercellular spaces, preventing ingress of oxygen and nutrients. Hyaluronidase combined with activated profibrinolysin, which lyses the fibrinous exudate, aids in producing intercellular passage of these necessary components. The removal of debris and the increased permeability promote healing by the production of healthy granulation tissue and epithelization.

Anisindione: A New Anticoagulant with Unusual Properties. K. Lange, E. Perchuk, M. Mahl and others. Am. Heart J. 55:73-79 (Jan.) 1958 [St. Louis].

Anisindione (2-*p*-anisyl-1,3-indandione) an anticoagulant of the indandione type, was given orally to 52 patients between 47 and 89 years of age for a total of 1,198 patient days. Six of the 52 patients had arteriosclerotic heart disease with auricular fibrillation, 2 had rheumatic heart disease with auricular fibrillation, 1 had postphlebitic syndrome, 1 had acute deep thrombophlebitis, 2 had arteriosclerosis obliterans with arterial thrombosis, 24 had arteriosclerosis obliterans, 12 had old cerebrovascular accident, and 4 had varicose ulcers. A dosage scheme was worked out for the initiation of a satisfactory reduction in prothrombin activity. This schedule consisted of 500 mg. the first day, 300 mg. the second day, nothing on the 3rd day, and 300 mg. on the 4th day. This dosage was used in 23 patients, and prothrombin activity in all had reached therapeutic levels within 36 to 72 hours. The therapeutic level was maintained rather uniformly with a maintenance dose of 250 mg. every 3rd day. The longest maintenance period was 112 days.

The individual response to a given dose of the drug is usually uniform. The effect of the drug can be rapidly interrupted by the use of phytonadione (Mephyton), 50 mg. of which may be given slowly intravenously in 10 cc. of isotonic sodium chloride solution or 10% dextrose solution. Maintenance doses of anisindione retained the anticoagulant effect previously established with bishydroxycoumarin (Dicumarol). Side-reactions to anisindione were noticeably absent in these patients. There were 3 instances of hematuria, 1 occurring at a therapeutically desirable level, 1 in a patient with a renal calculus, and 1 at a purposely induced very low prothrombin activity. There was no chromaturia, petechiae, agranulocytosis, or liver damage.

Comparative Clinical Study of Coumadin Sodium and Dicumarol in Patients with Thromboembolic Diseases. C. M. Shapiro, R. Lisker, A. M. Lichtman and A. M. Josephson. Am. Heart J. 55:66-72 (Jan.) 1958 [St. Louis].

In an attempt to compare the efficacy of warfarin (Coumadin) sodium and bishydroxycoumarin (Dicumarol), the authors treated 100 patients with thromboembolic disease with warfarin and 100 patients with the same disease with bishydroxycoumarin. Fifty patients treated with warfarin and 55 patients treated with bishydroxycoumarin were given aqueous heparin, 50 units intramuscularly every 4 to 6 hours, during the induction period. Patients were considered to be in a therapeutic anticoagulant range when the prothrombin time according to Quick's method was between 24 and 36 seconds (11-26% prothrombin activity). The initial dose of warfarin was arbitrarily fixed at 50 or 60 mg., depending on the weight of the patient. From 5 to 30 mg. was employed on the second day. The average daily maintenance dose was 5-10 mg. The drug was given orally in all but 4 patients who, because of nausea and vomiting, required intravenous administration. Bishydroxycoumarin was given initially in successive daily doses of 300, 200, and 100 mg., with only slight modifications depending on the results of prothrombin determinations.

Results showed that the ability of warfarin and bishydroxycoumarin to maintain a therapeutic hypoprothrombinemic state does not differ, since warfarin therapy was effective 70.8% of the time and bishydroxycoumarin therapy was effective 70.3% of the time. The latency period in the patients taking warfarin averaged 43.4 hours, and in those taking bishydroxycoumarin it averaged 80.3 hours. Heparin had no effect in shortening the induction period when given with warfarin but decreased by 12 hours the average latent period in patients receiving bishydroxycoumarin. Hypersensitivity to these 2 drugs was not significantly different, but escape from the effect of bishydroxycoumarin was almost twice as common. The ability of vitamin K and related compounds to reverse the action of these drugs was similar. Hemorrhagic phenomena were observed in 11 patients taking warfarin and in 8 patients receiving bishydroxycoumarin. Only 1 death was attributed to anticoagulant therapy; the patient died of intracranial hemorrhage and had received bishydroxycoumarin. The mode of action of warfarin, as with bishydroxycoumarin, seems to reside more in its ability to decrease the activity of stable factor than in the suppression of prothrombin activity.

Use of the "Colloid Osmotic Prosthesis" in the Therapy of Certain Edematous States. S. Esposito. Gazz. med. ital. 116:435-444 (Oct.) 1957 (In Italian) [Turin].

The author studied the diuretic effect of dextran in 2 groups of patients. One group consisted of 12 patients with compensated cardiovascular condition and normal blood pressure, whereas the other group consisted of 8 patients with various diseases associated with edema which was partly due to lowered plasma oncotic pressure. Dextran was given intravenously in a daily dose of 500 cc. to the patients in fasting state as a 10% colloid solution, infused at the rate of about 40 drops per minute for a period of 30 days. Patients with noncardiac conditions received a daily single dose, whereas the daily dosage of the patients with cardiac condition was divided into 2 equal doses, given morning and evening. Renal function in patients with a cardiac condition was observed before and 6 hours after the infusion of dextran. Dextran had an intense diuretic effect in all patients. This was confirmed by the increased rates of the glomerular filtration tests and by the decreased rates of tubular reabsorption of water tests. Dextran exercised a strong diuretic action and produced relief of edema in patients who had various diseases associated with edema. The best results were observed in patients who had a kidney disease. Two patients with biliary cirrhosis in the last stage of the disease derived no benefit from dextran therapy.

Several workers have demonstrated that dextran is completely metabolised in the body. The macromolecular structure of dextran brings about a long-acting increase of the colloid osmotic pressure. The author believes that these properties warrant the use of dextran as a "colloid osmotic prosthesis."

Rauwolfia Toxicity in the Treatment of Hypertension: Comparative Toxicity of Reserpine and Alseroxylon. R. V. Ford and J. H. Moyer. Postgrad. Med. 23:41-48 (Jan.) 1958 [Minneapolis].

The authors present a statistical analysis of the adverse reactions from Rauwolfia preparations observed in 452 patients with hypertension, 120 of whom received reserpine and 332 of whom received alseroxylon. Mild adverse effects, consisting of weakness and fatigue, occurred in 103 (86%) of the 120 patients; 88 (73%) complained of malaise, and 62 (52%) had dizziness. These symptoms persisted for more than 3 months in most of the patients. Moderate adverse effects were less frequent, nightmares occurring in 64 patients (53%) and insomnia in 61 (51%). Severe adverse effects were observed in a smaller group; agitation occurred in 37 (31%), depression in 18 (15%), and serious agitated depression in 18 (15%). The incidence of weakness and fatigue among the 332 patients receiving alseroxylon was 84%; malaise was noted in 65% and dizziness in 29%. About 20% of the group had these symptoms for more than 3 months. Moderate adverse side reactions consisted of nightmares in 18% and insomnia in 7%. Thirteen (4%) of the 332 patients showed agitation, 5 (2%) had a severe depressive reaction, and a disabling agitated depression occurred in 3 patients (0.9%).

These data reveal significantly more frequent and severe adverse side-reactions to reserpine than to alseroxylon. There are certain factors that one must consider as potentiating or predisposing to these side-reactions, as indicated by the finding that patients with previous neuropsychiatric diagnoses have these reactions much more often than do those without such diagnoses. The incidence of severe side-reactions was twice as high when the dose of reserpine was 1 mg. or more per day than it was when the dose was less than 1 mg. daily. The severity of hypertensive disease, as indicated by the necessity for therapy with ancillary antihypertensive agents, did not seem to influence the incidence of adverse side-reactions from the Rauwolfia compounds. Alseroxylon is an antihypertensive agent of equal therapeutic efficacy with reserpine in treatment of hypertension but with significantly less toxicity. A useful procedure in the initial treatment of hypertension is to start with reserpine, giving 0.25 mg. twice daily concurrently with 2 mg. of alseroxylon 4 times daily. Reserpine has an onset of action within 3 to 5 days, while the maximal response to alseroxylon is not obtained for 14 to 21 days. After 2 or 3 weeks one may discontinue the administration of reserpine, since the effect of alseroxylon has become established, and the dose of the latter may be reduced to 2 mg. twice daily. Ancillary antihypertensive therapy may be added as indicated.

Treatment of Influenza with Severe Bronchopulmonary Complications with Cortisone and Antibiotics. M. Plaza de los Reyes, R. Cruz-Coke, R. Orozco and others. Rev. méd. Chile. 85:569-573 (Oct.) 1957 (In Spanish) [Santiago].

Three hundred sixty-five patients with severe forms of either pneumonia or bronchopneumonia complicating influenza were hospitalized in the Aguirre Hospital at Santiago between July and August, 1957. The more severe complications of influenza were observed in patients with heart disease and chronic pulmonary disease and in elderly patients. The treatment consisted of administration of penicillin, streptomycin, and tetracycline in daily doses of 800,000 units, 1 Gm. and 2 Gm. respectively. No favorable changes in the course of the pulmonary disease were obtained from antibiotic treatment. Seventy-five patients died (21.6%). In patients with bronchopneumonia the death rate was 50%. Cortisone in daily doses of 100 mg. or prednisone in daily doses of 20 mg. were added to the antibiotic treatment. The combined treatment was maintained for 5 or 10 days, after which the daily dose of cortisone was gradually diminished to 75 mg. for 5 days, 50 mg. for 5 days, and then discontinued. Seven representative cases are reported. The patients were 3 young adults and 4 persons between the ages of 60 and 82 years. Before onset of influenza, the patients had one of the following diseases: active pulmonary bilateral tuberculosis, hepatitis, cardiosclerosis with insufficiency and congestive heart, cirrhosis, hepatitis, cardiosclerosis and diabetes. The pulmonary complications were unilateral or bilateral staphylococcal or pneumococcal pneumonia in 4 patients and bilateral bronchopneumonia in 3. Simultaneously with the treatment with hormones and antibiotics, cardiotonics were given to patients with cardiac insufficiency and isonicotinic acid to the patient with pulmonary tuberculosis.

The results of the combined treatment were excellent. All of the patients recovered after 10 to 23 days of hospitalization. Dyspnea and fever disappeared, the pulse became normal within 24 hours, and the bronchopulmonary symptoms subsided within 5 to 10 days of treatment. The treatment was well tolerated. The patients who were given antibiotics presented only a marked asthenia. Several of the patients died in shock caused from suprarenal insufficiency. On the basis of this observation the authors believe that the virus of influenza causes suprarenal insufficiency, which is prevented or controlled by cortisone therapy. They recommend combined antibiotic-hormonal treatment in cases of severe bronchopulmonary complications of influenza.

Long-Continued Treatment with Tetracycline and Prednisolone in Chronic Bronchitis: A Controlled Trial. E. N. Moyes and R. A. Kershaw. Lancet 2:1187-1191 (Dec. 14) 1957 [London].

Chronic bronchitis was defined for the purposes of this trial, as a chronic condition of at least 2 years' duration, characterized by a productive cough throughout the year and associated with dyspnea and bronchospasm. Preference was given to patients with pus in their sputum, and only those with moderate or severe disability were accepted. Care was taken to eliminate patients with typical bronchial asthma and with the so-called asthma-bronchitis or infected asthma, where differentiation between the 2 conditions is difficult, 1 merging into the other as infection supersedes on an asthmatic basis. Also excluded were patients with past or present evidence of cardiac failure, significant hypertension, peptic ulceration, or mental instability, who might have responded unfavorably to steroid therapy. Patients of group A, who served as controls, were given dummy tablets for 7 days and then aminophylline. Those of group B received first 500 mg. of tetracycline 3 times a day for 7 days, thereafter 250 mg. plus aminophylline. Those of group C received the same doses of tetracycline as did those of group B, and in addition 5 mg. of prednisolone 3 times a day.

Significant and often dramatic improvement was observed in 60% of the patients in the 2 groups who received tetracycline. This compares with 6% improvement in the group in which dummy tablets were substituted for the antibiotic. Diarrhea was reported by 33 (60%) of the 55 patients who received tetracycline. In 19 it was mild, but in the other 14 it was severe enough to call for modification of treatment. In 5 patients the administration of tetracycline was stopped temporarily until the symptom abated; in 3 a reduction in dosage for a week or 2 sufficed. Four patients were never again able to tolerate more than 500 mg. of tetracycline twice a day; in 2 other patients, long-continued treatment with oxytetracycline in 1 and sigmamycin in the other was substituted after efforts to reintroduce tetracycline therapy had failed. The results were practically the same in the 2 groups who received tetracycline, regardless of whether prednisolone or aminophylline was given in addition. This suggests that corticosteroids have little, if any, value as maintenance therapy in patients with chronic bronchitis.

PUBLIC HEALTH

Power Lawnmower Injuries in Georgia, 1955 and 1956: Results of a Survey. J. N. McClure Jr., H. C. Steed Jr., R. M. Alden and J. C. Terrell. J. M. A. Georgia. 46:555-557 (Dec.) 1957 [Atlanta].

In the late fall of 1956, after the lawnmowing season was over, a survey of Georgia physicians was made by means of a questionnaire in an attempt to more accurately measure the number and type of injuries caused by power lawnmowers. This survey was conducted by the Accident Prevention Unit of the Georgia Department of Public Health in cooperation with interested private physicians. Questionnaires were sent to 1,085 physicians. Of the 463 physicians who answered the questionnaires, 226 (48.8%) reported power lawnmower accidents while 237 did not. Many of the physicians in this last group were in specialties which would rarely, if ever, be called on to treat such injuries. The survey included only privately practicing physicians. No attempt was made to collect information from the emergency rooms of large hospitals. The gasoline rotary type mower was involved in the majority of the accidents, probably because it is both more dangerous and more frequently used than the other types of mowers. Most injuries resulted from direct contact with the mower, but a surprisingly high percentage (30.4%) were caused by objects which were thrown by the mower blade. The victims of such missiles were frequently not the operators of the machines. Over 90% of the injuries due to direct contact with the mower were injuries to toes, fingers, feet, or hands; many of these are probably due to negligence on the part of the operator.

The lower extremities were most often injured by objects thrown by the mower blade, but a considerable number of eye injuries were also caused in this way. The number of injuries producing permanent disabilities (14.1%) was surprisingly high, and attests to the violence of these machines. This study indicates that the problem of power lawnmower injuries is one of considerable magnitude. If the number of injuries continues to increase in the next few years, the power mower, particularly the rotary type, conceivably may be designated as a public health menace. The following recommendations are made: Organizations (such as the National Safety Council and the Public Health Departments) and the lay press should give educational publicity to this problem. Accident prevention should be emphasized. The county medical societies should encourage their members to speak before such groups as civic clubs, schools and churches. Much can be done toward accident prevention in this manner, particularly with the help of the local press.

BOOK REVIEWS

Pre-Employment Disability Evaluation: Detailed Policies Regarding Applicants Applying for Employment with Special Reference to Various Disabilities. By William A. Kellogg, M.D., F.A.C.S., Clinical Professor of Surgery, New York Polyclinic Post-Graduate Medical School, New York. Preface by H. L. Herschensohn, M.D., Medical Director, Douglas Aircraft Co., Inc., Santa Monica, Calif. Cloth, perforated for loose-leaf use. $10.50. Pp. 155. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

There is little doubt that, as medicine and associated sciences are enabled to salvage many persons who previously died before reaching maturity, industry will be more and more confronted with the too frequently submarginal physical laborers. The author has done much in this book to assist those who engage in this necessary type of industrial medicine. He describes a simple, logical basis for acceptance or rejection of those who are being considered for employment. Numerous blank pages are provided for special entries that may apply to the industry by which the medical examiner is employed and which the author has not covered in his text. All pages are perforated to enable one to prepare his own notebook and to arrange the material presented in the most convenient sequence. This book should be read by all physicians in industrial medicine and also by those who make only occasional preemployment physical examinations.

Liver-Brain Relationships. By Ian A. Brown, M.D., Ph.D., Associate-Professor of Neurology, Division of Neurology, Department of Neurology and Psychiatry, University of Minnesota, Minneapolis. Cloth. $6.50. Pp. 198, with 26 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

This monograph attempts to bridge the gap between what is currently known about the various types of liver disease and the changes in the central nervous system which may accompany or follow liver damage. A brief historical review of the liver-brain relationship is given in the opening chapter. Kinnier Wilson's monumental contribution, clarifying the relationship between liver disease and lenticular degeneration of the brain, is given due credit. One chapter is devoted to the liver and the many attempts to evaluate its functions. Admittedly, the present liver function tests leave much to be desired, and newer biochemical knowledge is necessary to evaluate all of the dozens of functions which the liver has. A discussion of the possible causal relations between alterations of those functions that produce central nervous system symptoms inevitably raises more questions than it answers. The author presents the following clinical classification of the nervous system participation in hepatic disease: (1) hepatoencephalomyelopathy without coma, (2) transient or episodic hepatoencephalomyelopathy, (3) hepatoencephalomyelopathy with coma and its immediate precoma stages, and (4) hepatolenticular degeneration (Wilson's disease). The interesting role of ammonia in brain function is discussed at some length in connection with portacaval shunt. The so-called blood-brain barrier, which permits some substances to pass quickly and which effectively bars other substances, is presented without any conclusions. The increasingly voluminous literature on the role of glucose metabolism, enzymes, iron, copper, porphyrins, hormones, amino acids, bile, oxygen, and carbon dioxide is well summarized and documented. The author concludes that no single substance can be incriminated as the cause of the cerebral alterations. This stimulating and provocative book should interest the neurologist, the internist, and the better-informed general practitioner.

An Introduction to Chest Surgery. By Goeffrey Flavell, F.R.C.S., M.R.C.P., Thoracic Surgeon, London Hospital, London. Cloth. $7.50. Pp. 354, with 177 illustrations. Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, England; 114 Fifth Ave., New York 11; Amen House, 480 University Ave., Toronto 2, Canada, 1957.

This short and yet comprehensive monograph is an excellent book for any student or practitioner interested in chest diseases. The first chapter deals with the physiology of the lungs. The author's statement, "Bronchial obstruction is just as much an acute surgical emergency as intestinal obstruction," suggests that he has had relatively little experience in the treatment of intestinal obstruction. However, the chapter is well done, as is the second chapter on surgical anatomy. Roentgenography of the chest is adequately covered, as is bronchoscopy. One chapter is devoted to the technique of pulmonary resections, including preoperative and postoperative care. The illustrations are line drawings and are excellently done. The x-rays are reproduced well. There is an excellent chapter on the chest wall and pleura, including injuries and inflammatory and neoplastic lesions. There is a rather long chapter on empyema; in fact, empyema is considered in greater detail than is probably necessary

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in view of its relative infrequency. Abscess of the lung, both malignant and benign, and bronchiectasis are considered. A short chapter deals with the various types of cysts of the lung. There is also a short chapter on benign tumors of the lung and an excellent chapter on bronchogenic carcinoma. The author, strangely enough, does not mention pulmonary function studies as a preoperative procedure. Various methods of therapy are considered. Pulmonary tuberculosis and its surgical treatment are discussed. Thoracoplasty is described in greater detail than is necessary, because it is now rarely used. There is an excellent chapter on tumors and cysts of the mediastinum and a good description of diaphragmatic hernia. There is also a splendid section on esophageal operations. The final section is devoted to surgery of the heart and great vessels. It is regrettable that this excellent book has no bibliography. However, it should be in every student's library.

The Healing of Wounds: A Symposium on Recent Trends and Studies. Edited by Martin B. Williamson, Ph.D., Professor of Biochemistry, Stritch School of Medicine, Loyola University, Chicago. Cloth. $7. Pp. 202, with illustrations. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E. C. 4, England; 253 Spadina Rd., Toronto 4, Canada, 1957.

This symposium is a summation of the material accumulated since World War II. The first eight chapters deal with theoretical and experimental material, and the last two chapters, Incisions Used in Gynecology and Clinical Approaches to the Concepts of Wound Healing, are of more practical value. The chapter on the metabolism of proteins and amino acids presents much controversial material, such as "The studies on the effect of injury on the level of total plasma proteins are not entirely consistent, some investigators reporting increases in the total plasma protein after injury and some reporting decreases"; and "No very marked changes occur in the levels of the various plasma proteins after wounding; those changes which do appear seem to be relatively nonspecific." Much of the material presented in this book is the result of experimental work on animals. One wonders about the specific species reaction and the value of such in human experimentation. Particularly singled out for careful study has been the role of ground substance, methionine, vitamin C, hormonal influences, and collagen. Although the major portion of the book is concerned with theory, at no time has Osler's principle, "primum non nocere," been forgotten. It was also refreshing to read this quotation from a contemporary teacher: "The basic fact that wound healing is a function of living tissues and is not hastened or stimulated but often retarded by any chemical agent applied to their surface is forgotten still too often." This book should be of value to those interested in theoretical and experimental considerations pretaining to wound healing. There is an extensive bibliography at the end of each section.

A Survey of State Pharmacy Laws Relating to the Sale by General Merchants of Non-Prescription Drugs, Variously Designated as "Patent or Proprietary Medicines," "Domestic Remedies," "Home Remedies," "Household Remedies," and by Similar Terms. Conducted by John M. Seus, B.A., LL.B., under a research grant from National Drug Trade Conference which is composed of delegates from American Association of Colleges of Pharmacy, American Drug Manufacturers Association, American Pharmaceutical Association, American Pharmaceutical Manufacturers' Association, Federal Wholesale Druggists' Association, National Association Boards of Pharmacy, National Association of Chain Drug Stores, National Association of Retail Druggists, National Wholesale Druggists' Association, The Proprietary Association. Paper. Pp. 112. American Pharmaceutical Association, 2215 Constitution Ave., N. W., Washington 7, D. C., n. d.

For many years the National Drug Trade Conference has been fostering uniform state legislation with respect to the practice of pharmacy and regulation of the production and distribution of drugs, medicines, and poisons. The conference committee on uniform state legislation has prepared "model" acts which have served numerous pharmaceutical groups as a basis for initiating or amending state laws. The committee is currently working on a "model" state pharmacy act, but it has not been able to reach an agreement in the area concerning restriction of the sale of nonprescription drugs, designated as "patent and proprietary medicines," "household remedies," or similar items. This survey was conducted to facilitate agreement and to provide a basis for developing definitions for the proposed uniform state pharmacy act. The report covers research on the statutory provisions dealing with permissive and restrictive provisions of state pharmacy acts. It should serve as a reference work for those engaged in the study of this subject.

Louis Pasteur: A Great Life in Brief. By Pasteur Vallery-Radot. Translated from French by Alfred Joseph. Cloth. $3. Pp. 199. Alfred A. Knopf, Inc., 501 Madison Ave., New York 22; McClelland & Stewart, Ltd., 25 Hollinger Rd., Toronto 16, Canada, 1958.

Few biographies combine the excitement of a novel and the scientific interests of the physician. This biography tells the story of the author's grandfather in an intimate and affectionate manner. The author is, in his own right, one of Europe's outstanding figures in medical research. The book describes some of Pasteur's least publicized accomplishments. Along with his theories on molecular asymmetry, fermentation studies on wine and beer, and research on viruses and vaccines, Pasteur even experimented in art, helping to eliminate the most annoying problem of the artist—the long period of time it takes the oil paint to dry. "Pasteur was a man with a practical mind. He carried his discoveries from the laboratory into the industrial domain.

'Pure science, on its highest level,' said he, 'cannot advance one step without sooner or later bringing profit to industry from the application of its precious results.' Consequently, he discarded a differentiation between theoretical and applied sciences." Pasteur showed no less love for politics than he did for science, and, during his schooling, he once gave all his savings to the new republican government. Another accomplishment was his acting ability. Because he possessed that gift bestowed on superior minds—to perceive what remains hidden from the crowd—the book is a profitable review of the adventures of the scientist who is always being told his ideas cannot succeed. Pasteur's usual answer was that "man contradicts for the sake of contradicting and does not believe because he will not believe." Louis Pasteur was best described by his friend Senarmont, who said, "If he finds nothing on the road he is traveling, don't worry, he will not stay on it. But I would be surprised indeed if he does not find something."

Roentgen Diagnosis of Abdominal Tumors in Childhood. By Charles M. Nice, Jr., M.D., Ph.D., Alexander R. Margulis, M.D., and Leo G. Rigler, M.D. Cloth. $4. Pp. 75, with 53 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

In this monograph, the authors discuss the roentgenographic diagnosis and particularly the localization of abdominal masses in children by employing simple procedures available in most hospitals and private offices. The anatomic features pertinent to localization are stressed. Reliance is placed chiefly on anteroposterior and lateral projection films with the use of other simple diagnostic procedures, such as excretory urography, barium enema, and barium meal studies. When indicated, the use of more complicated procedures is discussed. In their discussion, the authors use as a working classification the following plan, based on topography: (1) intraperitoneal masses in the region of the liver, (2) other intraperitoneal masses, (3) renal and adrenal masses, and (4) other extraperitoneal masses. The subject matter is covered in a concise, easily read manner and is beautifully illustrated. This monograph is recommended without reservation not only to radiologists and pediatricians but also to surgeons interested in the preoperative diagnosis of abdominal tumors in children.

Drugs: Their Nature, Action and Use. By Harry Beckman, M.D., Director, Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry, Milwaukee. Cloth. $15. Pp. 728, with 126 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W. C. 2, England, 1958.

This new textbook on pharmacology invades an area of medical literature already replete with sound reference works. The author's pungent and clear style, however, makes this new publication admirably adapted to the needs of undergraduate students. The first section deals with an orientation of pharmacology among the other basic medical sciences, the second with the general nature and behavior of drugs, and the third, comprising the major portion of the book, with detailed descriptions of the actions and practical applications of drugs. Selected references are listed at the end of most of the chapters. The presentation of material under the main section, which deals with drug actions and uses, departs from tradition in the order with which the classes of agents are discussed. Most chapter titles indicate the actions of each class of drugs, for example, Drugs That Dilate the Coronary Arteries, and Drugs That Promote Renal Uric Acid Transport. Some unusual titles are Drugs That Are Enzymes, Drugs That Are Hormones, and Drugs That Are Vitamins. The presentation of material is refreshing, and the double-column pages provide easy reading. A fairly comprehensive general index is also included. A chart of infectious diseases, listing the preferred drug for each, is duplicated inside the front and back covers. Few errors were detected.

Occipitoposterior Positions. By Edward L. King, A.B., M.D., F.A.C.S. Publication number 310, American Lecture Series, monograph in American Lectures in Gynecology and Obstetrics. Edited by E. C. Hamblen, B.S., M.D., F.A.C.S., Professor of Endocrinology, Duke University School of Medicine, Durham, N. C. Cloth. $3.75. Pp. 106, with 60 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

This small book on occipitoposterior positions is an excellent clinical review of this important subject. The author discusses the causative factors of delayed rotation and nonrotation and notes that anthropoid pelves favor this mechanism. The general management of labor in the patient in whom the occiput fails to rotate anteriorly is discussed. Definitive treatment by manual rotation of the fetal head and the various methods of forceps application and delivery are described. The author indicates his preference for the intravaginal rotation of the forceps blades to accomplish anterior rotation of the head. The failure of anterior rotation of the fetal head is probably less common today than formerly. Difficult delivery of the baby whose head has failed to engage deeply is avoided. In the final analysis, there are a number of good methods for correcting the failure of anterior rotation of the head, and it is the man behind the forceps and not the instrument or the method that determines the results. This small book can be read with profit by the student, the practitioner, and even the specialist.

QUESTIONS AND ANSWERS

TREATMENT OF UNDULANT FEVER

To the Editor:—*Please give information as to the modern treatment of undulant fever.*

Robert C. Bruder, M.D., Dearborn, Mich.

Answer.—Modern combined antibiotic therapy can induce prompt clinical remissions, may be lifesaving, and may prevent much physical deterioraton, grief, and expense, but the drugs are bacteriostatic, not bactericidal, and the treatment is suppressive, not curative. In addition to invasion of body fluids and tissue spaces, intracellular colonization by Brucellae is a characteristic feature of the disease. Modern therapy helps to remove Brucellae from fluids and tissue spaces but does not harm those that lie within body cells. These remain viable and virulent and, in the absence of an adequately efficient natural defense apparatus, serve as sources of endogenous remissions and of bacteriological and clinical relapses, which may be few or many. Permanent recovery probably depends ultimately upon the efficiency of the natural defense apparatus. If the stimulus to this apparatus, owing to the disease itself and to the accelerated killing of extracellular Brucellae consequent upon modern therapy and associated with the general physiological advantages of a clinical remission, does not allow it to achieve a certain minimal degree of efficiency for that individual, a relapse will occur. This relapse, and others that may follow, may be treated similarly, with either eventual recovery or continued discouragement.

If two or three courses of tetracycline, 0.5 Gm. orally four times daily for 21 days, accompanied by streptomycin or dihydrostreptomycin, 1 Gm. intramuscularly twice daily for 7 days followed by 0.5 Gm. twice daily for a second week, cannot prevent the occurrence of continued relapses, it seems that modern therapy fails in a certain proportion of patients, and that further research is needed. If the supposition is correct that recoveries depend upon an effective stimulation of the defense apparatus by materials conveyed into the body by invading Brucellae, and if these natural stimuli are inadequate even when aided by repeated antibiotic effects, it seems that what is needed is additional, persistent, proper use of a carefully selected brucellar antigen to raise the patient's resistance above the level at which relapse is certain. A useful discussion of this aspect of treatment can be found in *Brucellosis*, by Harold J. Harris, Paul B. Hoeber, Inc., N. Y., second edition, 1950. Unless more effective antibiotics for brucellosis become available, the supplemental treatment with an antigen seems more in keeping with the known pathogenesis and host-parasite relationships of this disease.

BRITTLE FINGERNAILS

To the Editor:—*What is the cause and treatment of "brittle fingernails"?*

W. M. Fowlkes Jr., M.D., Wendell, N. C.

Answer.—Brittleness of the nails, a manifestation of fraying or peeling of the terminal portions of the nail plates, may be symptomatic of a score of disturbances, some associated with injury to the matrix, as is commonly found in a great many women in whom brittleness develops in the absence of any local or systemic abnormality. The first goal should be to try to determine whether there is any local disturbance present, such as something which has been applied to the nails. There may have been excessive manicuring of the nails, reaction to solvents used in nail polishes and lacquers, or sensitivity to detergents.

Some workers believe that these solvents have more of a dehydrating than defatting effect on the nails. The use of certain alkaline preparations by people who have their hands constantly in water, such as housewives and bartenders, is felt by some to be a primary factor in nail brittleness. Several observers have felt that gelatin given by mouth is helpful; however, Sutton feels that the underlying cause may be a hypoproteinemia. He feels that some of these patients need iron, thyroid, and estrogens, although the indications are rather ill-defined. There have been exacting studies made on some of the mineral and organic constituents of diseased nails. Calcium, which has long been undisputed in the treatment of certain nail conditions, was subjected to detailed study along with phosphorus and total ash content of the nail clippings taken from patients having hard and brittle nails, and it was found that there was no evidence that the brittleness or hardness of the nails was in any way related to calcium or phosphorus. Felsch and his group have shown that the free amino nitrogen content is low in a patient with psoriasis. They also studied the sulfhydryl group and the disulfide link-

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age in normal keratinization as possibly being important in relation to the nails, as well as to the skin being studied.

As far as minerals are concerned, an interesting observation by Dietz reveals that administration of fluoride is helpful in cases of onychosis. His studies were to the effect that patients who had nail delamination desquamation associated with dental caries responded with marked improvement to the administration of sodium fluoride tablets in six weeks to two months' time. However, this preparation should not be given to patients under 12 years of age, and it alone is no panacea for all such cases—proper diet, among other things, is also important. In patients with hypothyroidism, the thyroid extract would be of definite help. The question of vitamins, lack of vitamins, or their utilization in the presence of brittleness of the nails has been described by some, and it has been found that the administration of vitamins A and D has been of considerable help. Vitamin A effects epithelization of cells, so that it is possible that in some cases it would be of definite help as far as brittleness of the nails is concerned. Pillsbury and co-workers point out that the underlying defect that promotes brittleness is an architectural abnormality in which these nails, unlike normal nails, have central thin plates extending laterally, there being no clue as to why this should occur. Naturally, excessive manicuring and the use of various preparations containing solvents would affect this type of nail more than normal nails.

The systemic causes of this abnormality are sometimes quite remote and may make difficult an absolute diagnosis. More knowledge of the local chemistry of the nail plate is to be desired. Certain fatty acids, particularly cholesterol, appear to assist in maintaining the natural elasticity of the nails, and, of course, the use of an emulsified form of water should be of some assistance in maintaining more moisture in the keratin of the nail. Lamination of the distal portions of the nails has been pointed out to be due to secondary anemia, and, in those instances, the condition responds to iron therapy fairly promptly.

ARTIFICIAL COLORING OF FRUITS

To the Editor:—*What chemicals are used in artificial coloring of fruits, especially oranges? Are any of these carcinogenic? Is ethylene ever used as a coloring agent? What laws have been passed restricting the use of these chemicals?*

O. G. Hamilton, M.D., Bluffton, Ind.

Answer.—It has been a practice of long standing to resort to coloring in order to improve the appearance of products. Synthetic coal tar dyes have been known only since the middle of the last century. Previous to that time, coloring materials used were of natural origin. In order to protect the health of the public, the United States government permits food manufacturers to use only such batches of coal tar dyes as have been tested by the Food and Drug Administration and have been found by this agency to be harmless and suitable for use. Such dyes are known as "certified" dyes. At the present time, this consultant is not aware of any evidence indicating that the coal tar dyes presently in use are carcinogenic. The Food and Drug Administration constantly keeps a very close check on these products, and should there be any suspicion of harm at all, such products are removed from the certified listing. Methods of artificial coloring of citrus fruits have been used extensively for many years. The use of ethylene gas in the coloring of oranges is practiced quite widely. The mechanism of this reaction is not known, but apparently the gas activates the upper peel of the orange and stimulates the fruit to renewed life activity for a period of from 5 to 10 days, thus bringing about a discoloration of the green pigment. One part of ethylene in five million parts of air can produce the effect. Since ethylene is highly volatile, there is no danger from any residual ethylene being retained by the fruit.

VITAMIN E IN HUMAN NUTRITION

To the Editor:—*What is the present status of vitamin E (alpha-tocopherol) in human nutrition? Is vitamin E of any value in the treatment of endochondrodystrophies such as slipped epiphysis, Legg-Calvé-Perthes disease, or Osgood-Schlatter disease? Is there any therapeutic difference between the natural and synthetic forms of the vitamin? Are there any good recent reviews of this topic?*

Richard G. Rosen, M.D., Fort Bragg, N. C.

Answer.—The status of vitamin E in human nutrition remains unclarified at the present time. Clinical syndromes associated with vitamin E deficiency have been diligently sought for many years; however, no human syndrome has been recognized which is directly attributable to lack of vitamin E or which is corrected by administration of vitamin E. Laboratory tests associated with vitamin E deficiency in animals (i. e., low alpha-tocopherol blood and tissue levels and increased red blood cell sensitivity to hydrogen peroxide) have been described in obstructive biliary cirrhosis; cystic fibrosis of the pancreas, newborn infants; and children with steatorrhea, thyrotoxicosis, and liver disease. Nevertheless, there is no evidence that lack of vitamin E played an etiological role in any of these conditions or that these laboratory tests were correlated with any symptomatology. There are no data available that permit a comment on whether or not these abnormal laboratory tests indicate a need for administration of vitamin E.

Knowledge of the action of alpha-tocopherol is inadequate. Tocopherols have a nonspecific antioxidant effect which is thought to represent a secondary role. Nason has suggested that alpha-tocopherol may act as a cofactor in the cytochrome C reductase system. There is no well-defined relationship between vitamin E deficiency and endochondrodystrophies. Lowered blood levels of vitamin E were reported by Ponseti; however, experimental vitamin E deficiency in animals and man is not associated with skeletal lesions of this type. Ponseti also reported that the skeletal lesions produced in animals fed Lathyrus odoratus seeds were not prevented by synthetic or natural vitamin E. We are aware of no reports that vitamin E is effective in these conditions.

The synthetic forms of vitamin E may vary in potency and solubility, and, in addition, some forms may inhibit other enzyme systems, at least in vitro. There is evidence that a recent water soluble form (d-alpha tocopherol polyethylene glycol 1,000 succinate) may be effective orally in patients with poor fat absorption. The various manifestations of vitamin E deficiency in animals have been reviewed by Dam (*Pharmacol. Rev.* 8:1, 1957) and in the *Annals of the New York Academy of Sciences* (vol. 52, Oct. 31, 1949). Skeletal lesions produced by Lathyrus odoratus seeds have been discussed recently by Selye (*Canad. Biol.* 16:1, 1957).

YELLOW FEVER IMMUNIZATION

TO THE EDITOR:—*With what frequency does postvaccinal encephalitis occur after subcutaneous yellow fever inoculation with the 17-D strain? Is there any reason why subcutaneous yellow fever vaccination and multiple pressure smallpox vaccination should not be given on the same day? How long after subcutaneous inoculation with 17-D strain vaccine are general systemic reactions most likely to occur?*

Hugh W. Randel, M.D., New York.

ANSWER.—Millions of doses of yellow fever vaccine prepared from the 17-D strain have been given without the development of any recognized complication other than the transitory mild fever, malaise, and headache which occurs in about 5% of persons receiving this vaccine. This reaction comes on about one week after vaccination, lasts about one day, and rarely interferes with normal activity. Some years ago, during the early use of the vaccine in South America, a few cases of encephalitis were observed after vaccination with a particular substrain of strain 17-D (Fox and others, *Am. J. Hyg.* 36:117, 1942). The use of this substrain was abandoned, and no such episode has been reported since then in the western hemisphere. However, in the last three years about 12 or 15 cases of mild, self-limited encephalitis without sequelae have been reported from England, France, and Africa in very young infants, occurring about 10-20 days after vaccination with the standard 17-D strain. In some of these cases, the clinical syndrome observed could not be ascribed to any other recent event, such as smallpox vaccination or a recognized acute infection. These episodes arose in the course of what must have been several hundred thousand yellow fever vaccinations. This actually represents an extraordinary record of safety.

On the other hand, the French neurotropic strain of yellow fever vaccine, which has been administered to perhaps 50 or 60 million people, has resulted in a small number of severe cases of encephalitis, some of them fatal. It would be fair to say that the neurotropic vaccine is not as safe as, for example, smallpox vaccine, whereas the 17-D strain of yellow fever vaccine is undoubtedly one of the safest vaccines in existence.

There is no known contraindication to simultaneous smallpox and yellow fever vaccination, which has been done innumerable times in persons scheduled for overseas travel.

INSECTICIDE INTOXICATION

TO THE EDITOR:—*A man was hospitalized for diagnosis and treatment of an illness which appeared to be of industrial origin. He complained of severe pressure in his head, dizziness, and lack of appetite; his wife described many personality changes (depression) over the preceding week. The dizziness seemed to be aggravated if someone sat on the bed or jiggled the bed at all and has become progressively worse. The patient's job is loading and working with grain which has been treated with many different poisons, including methyl bromide (Test Master), a liquid seed disinfectant (Panogen), and an insecticide containing piperonyl butoxide. He wears a gas mask when working. The blood bromide level was 5 mg. per 100 cc. (normal for this laboratory is 1 to 1.5 mg.). A 24-hour urine test for mercury was negative. After one week the patient was discharged, with no medicaments prescribed; at that time he felt much better. Could the intoxication cause all the symptoms of the patient?*

Duane F. Hyde, M.D., King City, Calif.

ANSWER.—Of the three mentioned insecticides, methyl bromide may be the chief suspect, although Panogen, which is cyano(methylmercuri)guanidine (methylmercury dicyandiamide), distinctly is toxic. In severe methyl bromide poisoning, the organs of foremost attack are the lungs, with pulmonary edema being the prime manifestation. The apparent absence of any lung involvement in the present instance suggests minor severity. Johnstone (Occupational Medicine and Industrial Hygiene, St. Louis, C. V. Mosby Company, 1948) thus describes low-severity cases: "In patients who have been exposed to small but nevertheless harmful amounts over a period of time, the clinical picture is bizarre and almost unbelievable. This author examined 34 date packers at Indio, Calif., who had been exposed to methyl bromide for a period of several weeks. It will be noted that each patient complained of a visual disturbance which frequently constituted the first sign of trouble. Mental confusion and speech disturbances likewise occupied a prominent place in the incidence of signs and symptoms following methyl bromide poisoning. All these patients recovered without suffering permanent pathologic disability." The various signs and symptoms encountered were visual disturbances, speech disturbances, mild mental confusion, hallucinations, melancholia, coma, convulsions, apathy, tremor, neurosis, fainting attacks, and numbness of extremities. The basis for ascribing this condition to methyl bromide, if in fact it be of occupational origin, is the reported finding of a high level of bromide in the blood of the patient and, conversely, a negative finding as to mercury in the urine.

RECTAL PAIN WITH PROSTATIC DISEASE

To the Editor:—*A man complained of a small nodule in the right testis, present for several years. There was no pain in the testis, but there was deep-seated rectal pain. The nodule was excised, and because of suspected malignancy the testis was removed. The pathological report came back with "evidence of malignancy." A portion of the cord was removed, but no trace of malignancy was found. The deep-seated rectal pain continued for one year, and again the patient sought relief. At this time a nodule appeared in the left testis. A prostatic smear showed acid-fast bacilli. Tuberculosis had been suspected before, and the patient had been taking streptomycin, PAS, and isoniazid. After six months the prostatic smear is still positive. Would cortisone or its derivatives be indicated, and, if so, in what dosage? There is no loss of weight; the patient looks well and complains only of this deep pain.*

L. Tummers, M.D., Patna, Bihar, India.

Answer.—It is difficult to arrive at a diagnosis which will cover every aspect of the patient's genitourinary complaints. One cannot disregard entirely the evidence of malignancy which was reported by the laboratory. Nevertheless, a diagnosis of genital tuberculosis, beginning as a prostatitis and seminal vesiculitis, spreading first to the right epididymis and then to the left, naturally suggests itself and appears to be the most logical explanation for the sequence of events. Insofar as treatment is concerned, the administration of antituberculosis agents, including streptomycin, PAS, isoniazid, and pyrazinamide is definitely indicated. Cortisone should not be used because it would encourage spread of the inflammatory process. It is possible that the patient has a tuberculous abscess of the prostate gland. This would account for the rectal pain as well as the persistence of the infection in spite of the treatment. If an abscess does exist, adequate perineal drainage followed by the chemotherapy is most definitely indicated.

SYMPATHECTOMY IN DIABETIC PATIENTS

To the Editor:—*A 65-year-old man has been diabetic for the past 15 years. His circulation in both legs is deficient, and there is coldness of extremities and pain on walking. All symptoms of Raynaud's disease are present. There are two ulcers present, one on the plantar surface of the foot and the other on the inner malleolus. These have not responded to treatment. He has been advised to have a sympathectomy by a surgeon. What percentage of patients get favorable results with this operation? Would any other treatment be suggested before surgery?*

J. L. Snavely, M.D., Sterling, Ill.

Answer.—Insufficient data are supplied in this question to give a satisfactory answer. The presence or absence of palpable pulsation in the femoral and popliteal arteries would be helpful. The statement, "all symptoms of Raynaud's disease are present," needs to be clarified. Raynaud's disease is most commonly found in young people and is rare in diabetic persons. This patient probably has arterial insufficiency due to arteriosclerosis.

In the experience of this consultant, sympathectomy is not too beneficial in diabetic patients in this age group. If, however, the foot sweats or changes color easily when the patient is cold or nervously upset, vasomotor activity is probably present and sympathectomy might help.

If the popliteal and pedal pulses are absent, a femoral arteriogram to determine the presence of a local block in the femoral artery susceptible to an artery graft might be done. Before surgery is resorted to, a period of observation in the hospital with rest in bed, the best possible diabetic management, and the use of conservative measures should be tried.

CARCINOMA AND DIABETES

To the Editor:—*Is there an increased incidence of carcinoma among diabetics? If so, are there any types of malignancy more common in diabetics than in the general population?*

M.D., New Jersey.

Answer.—Many studies indicate a significantly increased incidence of cancer in the diabetic population. Reviewing the experience of the Baker Clinic, Marble (*New England J. Med.* 211:339, 1934) found 256 cases of cancer in 10,000 diabetics. Joslin and others (Treatment of Diabetes Mellitus, ed. 9, Philadelphia, Lea & Febiger, 1952) reported an increase in the incidence of cancer as a cause of death among diabetics from 1.5% in 1900 to 9.6% in 1952 and concluded that this was due to an increased longevity of the diabetics since the onset of the insulin era. McKittrick and Root (Diabetic Surgery, Philadelphia, Lea & Febiger, 1928), Inglefinger (*New England J. Med.* 235:653, 1946) and Marble have reported that cancer of the pancreas accounted for between 13 and 32% of the cancer noted in diabetics as compared to a total population frequency of approximately 3.5% of all cancer patients. Glicksman and Rawson (*Cancer* 9:1127, 1956) and Marks and Bishop (*J. Clin. Invest.* 36:254, 1957), independently, have reported, recently, that altered carbohydrate metabolism as well as overt diabetes appears to be significantly associated with neoplasia. It is interesting to note that patients with neoplasms of the endocrine organs had the highest incidence of diabetes; of particular interest in this regard was cancer of the endometrium. Thus, not only is there an increased incidence of cancer in the diabetic population, but there appears to be a significant increase in altered carbohydrate metabolism and overt diabetes in the cancer population.

INTRAVENOUSLY GIVEN BARBITURATES FOR SHORT-TERM SURGICAL PROCEDURES

To the Editor:—*Is it considered good medical practice to use barbiturates intravenously as the sole anesthetic agent to obtund pain in reduction of fractures of the extremities or in the performance of a simple mastectomy? Should a barbiturate be used intravenously for analgesia?*

Milton Jabush, M.D., Lakewood, N. J.

Answer.—It is considered better anesthetic practice to combine 70% nitrous oxide and 30% oxygen with the ultra-short-acting intravenously given barbiturates. These latter agents, although excellent hypnotics, are poor analgesic drugs. The addition of the nitrous oxide–oxygen mixture provides the analgesia, increases the available oxygen, decreases the total amount of barbiturate required, and thus shortens the postoperative recovery period. Probably of equal or even more importance is the fact that when this method is used, the anesthesiologist must pay more attention to the patient's respiratory exchange. If difficulties of this nature arise during the operation, the anesthesia machine is at hand and resuscitative treatment can be started immediately.

Answer.—Thiopental sodium, given intravenously, is a very efficient analgesic or anesthetic agent for short-term procedures such as the reduction of fractures or dislocations. It is quick acting and its effects rapidly clear after the injection has been stopped, leaving minimal side-effects such as nausea or vomiting. However, it should never be used without proper care to safeguard the patient, such as having available oxygen and someone completely familiar with its use.

VITREOUS OPACITIES OF THE EYE

To the Editor:—*A 43-year-old man has vitreous opacities in the form of muscae volitantes. He claims they have been present for at least 25 years, but he thinks that recently they have tended to grow worse. He has a mild chronic conjunctivitis and a chronic amebic colitis, acute flare-ups of which make the condition worse. He has an 0.25 D. astigmatism, and his near point is now 24 cm. His visual acuity is better than average, probably 30/20. Is there a reasonably effective treatment?*

Santiago Barahona Streber, M.D., Mitla, Oaxaca, Mexico.

Answer.—The mild, chronic conjunctivitis and the chronic amebic colitis are most probably related. The chronic conjunctivitis should be treated over a long period with a 30% solution of sodium sulfacetimide. The chronic amebic colitis should be treated by the proper gastrointestinal drug. X-rays of the teeth should be made and any apical abscessed tooth removed. Once the vitreous opacities have formed and are increased, there is one method of removing them surgically. This is a rather drastic procedure, to be considered only if the medical treatment does not improve the condition. The procedure consists of a removal of the vitreous and an injection of either spinal fluid or vitreous from a freshly enucleated eye into the globe. In this way the opacities in the vitreous body would be entirely done away with. It is unusual for an individual to have muscae volitantes for years and then suddenly experience an increase due to intercurrent infection. Recently, many such patients have improved on steroid therapy, but this should not be used until all other methods have been tried.

UNEXPLAINED RASH OF TEN MONTHS' DURATION

To the Editor:—*A 3-year-old girl is in good health except for a discrete maculopapular rash that began 10 months ago on the chest and has spread to the neck, upper forearms, and thighs. There is no infectious problem and no weight loss since the beginning of the rash and no known food allergy or familial disease. The patient has been treated for psoriasis without benefit.*

L. A. Dunton, M.D., De Land, Fla.

Answer.—From what can be determined, the most likely cause of the eruption is insect bites. Fleas, mosquitoes, or other such insects could cause such a condition. Treatment with 10% pyrethrum and 1% chlorophenothane in calamine lotion could be utilized. This should be applied to the lesions as necessary, for itching, and to the entire body except the face and hands upon retiring. The parents should be warned that the preparation is poisonous and must be kept out of the child's mouth. Another diagnostic possibility would be urticaria pigmentosa. In this condition, rubbing the lesions causes the formation of an urticarial wheal in and around the involved areas. Diagnosis is established by finding a mast-cell infiltrate on examination of an appropriately stained specimen obtained by the performance of a biopsy. The cause is unknown, and there is no known effective treatment.

EFFECT OF SULFURIC ACID ON TEETH

To the Editor:—*Please inform me of the effect of sulfuric acid gas on tooth enamel, porcelain fillings, and gold inlay. A laboratory technician has been pipetting* N/12 *solution of sulfuric acid for blood glucose determination. Her dentist has raised the question of enamel decay and porcelain stain due to sulfuric acid.*

Allan V. Morgan, M.D., Pittsburgh, Pa.

Answer.—There is little doubt that continued pipetting of sulfuric acid without proper precautions will eventually cause etching and partial solution of the enamel. The rate and degree of injury will depend on how much acid actually comes in contact with the enamel and how long it remains on the enamel surface. Acid etching can be felt by the tongue as a sour taste and a roughening of the enamel surface. Damage to the enamel can be minimized by using a long rubber tube on the end of the pipette and by a thorough mouth rinse with a bicarbonate of soda solution if acid is suspected to have entered the mouth. Synthetic porcelain fillings are also dissolved by acids. The enamel margins around gold inlays may also be attacked by acids, causing them to fall out.

POST-HERPETIC NEURALGIA

To the Editor:—*A patient, aged 77, has had a herpes zoster ophthalmia for many months. He still has rather marked pain despite all treatments. Please give suggestions.*

Robert O. Sherwood, M.D., San Mateo, Calif.

Answer.—The pain mentioned is apparently due to post-herpetic neuralgia, since no mention is made of the eyeball (glaucoma, uveitis, etc.). If current methods of treatment, including corticosteroid therapy, do not relieve the severe pain, chemical or surgical nerve block or/and radiation therapy should be considered. Procaine or alcohol injection may be used peripherally or in the sensory root of the gasserian ganglion. Surgical section involves the same locations or/and the spino-ophthalmic tract. Radiation therapy may be applied to the gasserian ganglion and/or spinal nerve roots. Surgical nerve blocks and radiation therapy should be done only by those familiar with the techniques, risks, and benefits involved.

ASPERGILLUS EAR INFECTION

To the Editor:—*A patient has what appears to be, on culture, an Aspergillus infection of the ears. He has been to seven doctors, including specialists in large cities, without help. Will x-ray therapy be beneficial? How often is aspergillosis pathogenic? What additional medication is indicated?* *M.D., Alabama.*

Answer.—Aspergillus is a common type of mold found in ears of patients with external otitis. It is believed to be a secondary infection and not the primary agent in most of these cases. Staphylococcus aureus and Pseudomonas aeruginosa are the usual causative organisms of the external otitis, with the Aspergillus as a secondary infection. Ear drops of sulfisoxazole otic solution, combined with careful cleaning of the external auditory meatus, is usually effective in these cases. If it is an allergic dermatitis, attention should be given to the allergic factor. X-ray treatment is not as likely to be as helpful as careful cleaning and the use of an appropriate antibacterial medication. A 1% thymol concentration in creatine as ear drops has been recommended as specific for the Aspergillus mold infection.

VITAMIN AND MINERAL SUPPLEMENTS DURING PREGNANCY

To the Editor:—*What is the current status of vitamin and mineral supplements during pregnancy? Are iron and calcium supplements necessary with a well-balanced diet?* *M.D., Virginia.*

Answer.—The level of nutrient intakes recommended by the food and nutrition board of the National Research Council for pregnant and lactating women can be attained through the use of properly chosen foods and without the addition of any dietary supplements. If any doubt exists as to the adequacy of the previous diet, it may be desirable to administer iron, calcium, vitamin D, and the B vitamins. Frequently, because of calorie restriction and/or inability to drink milk, iron and calcium supplements are prescribed. The need for these must be individually determined.

PREVENTING PERSPIRATION ODOR IN SHOES

To the Editor:—*Is there any procedure that will prevent or abolish the perspiration odor which leather shoes may acquire after prolonged use?*

M.D., California.

Answer.—No way is known to deodorize leather once unpleasant odor has developed. However, the odor may be prevented from developing in the first place. This involves daily care of the feet. Bacterial decomposition of body excretions has considerable influence on objectionable odors which arise in the axillas, groin, and on the feet. If one were able to wash frequently enough, this odor could be controlled. In a few persons, washing the area once a day is sufficient. However, in the majority, a deodorant is necessary for complete control. It is also well known that clothing which encloses the area develops an odor. For this reason, daily changing of socks will help the situation considerably. A number of foot deodorants containing antibacterial agents are available. If an adequate foot product cannot be found, a cream, lotion, or stick underarm-deodorant which contains an antibacterial agent can be used.

LERICHE'S DISEASE VERSUS LeRICHE'S SYNDROME

To the Editor:—*What is the difference between Leriche's disease and LeRiche's syndrome?*

M.D., Michigan.

Answer.—Correspondence received in the Standard Nomenclature office reveals confusion between the conditions known as Leriche's disease and LeRiche's syndrome. The terms are being used interchangeably, which results in erroneous classification. Leriche's disease is an acute bone atrophy developing at the site of injury or inflammation. The bone injury or infection must be specified with .9 to indicate atrophy. LeRiche's syndrome should be classified and coded 4616-942.7 Thrombosis of abdominal aorta (saddle-shaped) due to arteriosclerosis. The thrombosis is usually lodged at the bifurcation.

POSTPARTUM PSYCHOSIS

To the Editor:—*Is there some way to officially (that is, according to some standard nomenclature) diagnose postpartum psychosis?*

M.D., Ohio.

Answer.—The term puerperal or postpartum psychosis does not represent a clinical entity. Studies have established that any psychosis may have its incipience during pregnancy or after childbirth. In a group of 83 cases studied, 51.8% were classified as dementia praecox, 42% as manic-depressive, and 7% as psychopathic personality. It is interesting that the complications of pregnancy and labor, such as puerperal infection and the toxemias, no longer play an important role in the causation of puerperal psychosis. In the above group of patients, two had toxemias of pregnancy and two prolonged labors. The recurrence of puerperal psychosis in a subsequent pregnancy would depend on the diagnosis and the response to therapy. These would likewise determine the advisability of a subsequent pregnancy.

TOXIC CHEMICALS IN ANIMAL FEED

To the Editor:—*I would like to take exception to the answer given by an expert in the "Questions and Answers" section in* The Journal, *Feb. 1, 1958, page 554, regarding an animal feed additive which might cause dilatation of the pupils in workers mixing the feed. This is the disturbing part: "Lacking precise information, there is reason, cautiously, to suspect furazolidone and nitrofurazone. The only basis for this suspicion is that certain other complex furan compounds are regarded as possible substitutes for atropine. Dilatation of pupils in itself may be relatively unimportant but may constitute the initial indication of far more significant damage." It is believed, however, that neither of these nitrofurans, nitrofurazone or furazolidone, is responsible for this condition, for the following reasons. 1. Nitrofurazone ophthalmic ointment and liquid have been on the market for a period of seven years, and apparently there have been no reports of its causing pupillary dilatation in the world literature. 2. Nitrofurazone has been administered orally in about 50 individuals on an experimental basis for the treatment of testicular neoplasms. The dosage has ranged from 1.5 to 2 Gm. per day up to 21 days, and pupillary dilatation has never been reported. 3. Furazolidone has been administered to over 300 individuals in doses of 400 to 1,000 mg. per day for periods varying up to 21 weeks, and mydriasis has never been reported. 4. In the production of these nitrofurans for 12 years, workers have been exposed almost constantly to these compounds five days a week throughout this period. These employees have been checked on a number of occasions, and never has a pupillary dilatation been detected in any of them nor has there ever been a complaint to this effect. 5. The consultant answering this question stated, "The only basis for this suspicion is that certain other complex furan compounds are regarded as possible substitutes for atropine." To my knowledge, the only furan derivative that has been tried is furtrethonium iodide, which is reported on page 176 of "New and Nonofficial Remedies" for 1953 as having a parasympathomimetic action and thus is a miotic rather than a mydriatic agent. 6. Both of these compounds, nitrofurazone and furazolidone, have been tested extensively in animals for toxicity as well as activity. This includes instillation in the eyes of animals. Pupillary dilatation has never been produced. In view of this information, these nitrofurans should not be incriminated in any way in the situation described by the questioner.*

Paul F. MacLeod, M.D.
Eaton Laboratories
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WASHINGTON NEWS

FROM THE WASHINGTON OFFICE OF THE AMERICAN MEDICAL ASSOCIATION

Congress Steps Up Pace
on Health Legislation . .
U. S. Allocates More Money
for Construction Projects . .
A.M.A. Advises a Stronger
Medical Department in CAA . .
"Breakthroughs on Cancer in Sight,"
Dr. Heller Says . .

PACE STEPS UP FOR HEALTH LEGISLATION

The tempo of congressional activity steps up this month as members return from their annual spring sounding of voter sentiment afforded by the traditional Easter recess. Affected by the change in pace are both medical and health-related measures.

After rather rapid progress, a Democratic-sponsored public works bill was held up on the Senate floor by one vote until after the recess. Billed as an antirecession measure, it now provides for 1 billion dollars in loans to states and municipalities for building such things as public hospitals, health centers and possibly state medical schools. It provides for 3½%, 50-year loans; the original version called for a 2 billion dollar fund at 3%. The bill, opposed by the administration, has received mixed reactions elsewhere.

The Veterans Administration budget for the next fiscal year has passed the House and gone to Senate hearings, as has the Health, Education, and Welfare appropriation bill. The House voted slightly lower sums than requested for the VA in two categories, but this was more than offset by an increase in a third item. The VA items were medical administration, 21 million dollars; inpatient care, $715,465,000; and outpatient care, 75 million dollars.

Another prerecess development was Senate Labor Committee approval of a bill to require registration and periodic financial reporting of union and management health and welfare funds. Some 4,000 plans involving over 2 million employees would be affected. The action follows several years of study and hearings on the broad subject of abuse of union funds.

The House interstate subcommittee on health is getting active again, with hearings planned this month on chemical additives to foods, another longstanding issue; milk sanitation standards; and chemical preservatives.

The House Ways and Means Committee has concluded hearings on various bills that would, among other things, extend the period of benefits under federal-state unemployment insurance and require all employers, physicians included, to come under the system.

Nelson H. Cruikshank, head of the AFL-CIO's social security department, indorsed the proposal as an antirecession move, and at the same time he asked that the United States share in payments to all public assistance cases. (Under present law the United States contributes only to the needy aged, dependent children, blind, and disabled.)

John W. Tramburg, New Jersey welfare commissioner and former U. S. social security commissioner, took the same stand. He spoke for the American Public Welfare Association.

Frank B. Cliffe, a spokesman for the U. S. Chamber of Commerce, opposed the changes, saying the states have ample reserves to carry their unemployment compensation costs for many months, often for years, and that "federal intervention would merely discourage them from doing the job."

This viewpoint also was expressed by a number of representatives of state employer groups.

HEW SPEEDS UP CONSTRUCTION GRANTS AS ANTIRECESSION MOVE

In line with the administration's policy of increasing construction under existing programs, the Department of Health, Education, and Welfare is passing out grants more rapidly in three activities in the health fields. The three programs are for construction of medical research facilities, of hospitals, and of municipal waste treatment plants.

In January, their combined schedules called for awarding 670 million dollars in contracts before the end of the fiscal year on June 30; under the speed-up plan, the total will be over 800 million dollars. In each case local funds also are involved.

The faster pace is being maintained by giving higher priority in allocation of U. S. funds to projects on which building can start quickly. The largest increase is in the building of medical research facilities by hospitals, medical schools, and other institutions, for which the U. S. provides 30 million dollars a year. Total value of contracts to be let this fiscal year (U. S. and local funds) has been increased from an estimated 120 million to 182 million dollars.

Contracts to be let this year for hospital construction under the Hill-Burton program are being increased from 381 to 405 million dollars, of which the federal share will be about 135 million.

In the waste plant program, the January estimate was 170 million dollars in contracts, which has been increased to 215 million, with the U. S. share 57 million.

A. M. A. ASKS CONGRESS TO STRENGTHEN CAA'S MEDICAL DEPARTMENT

The American Medical Association is requesting Congress to pass legislation strengthening the Civil Aeronautics Administration's medical department and, among other things, substantially revising the present method of handling many aspects of aviation medicine.

A letter from Dr. F. J. L. Blasingame, A. M. A. general manager, to Chairman Warren G. Magnuson (D., Wash.) of the Senate Committee on Interstate and Foreign Commerce urges approval of S. 1045 which is before the committee. Dr. Blasingame's letter points out that the A. M. A. now has a permanent committee on aviation medicine and that the Association's support of the bill is based on recommendations of that committee.

The letter makes these points:

1. The A. M. A. is "seriously concerned" with the present state of civil aviation medical matters because the jet age and more air traffic have put increased physical demands on pilots. This situation, the Association said, requires action by Congress to establish a separate medical office in CAA.
2. Physical standards for and medical evaluation of fliers "must be carried out by physicians experienced in aviation medicine, and medical determination should be conducted by physicians . . . who have the necessary professional qualifications and experience."
3. A proposed civil aeronautics medical research laboratory "seems desirable and necessary."
4. An office of civil air surgeon should be established in CAA, with the chief "directly responsible to the administrator in matters of policy, administration, regulations, etc."
5. Rule making authority for medical standards should be transferred from the Civil Aeronautics Board, which does not have qualified medical personnel, to the CAA, which does have.

Dr. Blasingame's letter adds: "While we do not suggest that this bill is the only method by which the needed reforms . . . may be accomplished . . . we do believe that it represents the best mechanism currently proposed for accomplishing reforms."

"BREAKTHROUGHS AGAINST CANCER NEAR," DR. HELLER SAYS

In the opinion of Dr. John R. Heller, head of the National Cancer Institute, American science is "on the threshold of breakthroughs" in understanding the nature of cancer and discovering new and powerful drugs for controlling the disease.

Dr. Heller expressed his views at the first "Cured Cancer Congress" in Washington, D. C., dramatized by the attendance of 30 persons who had been cured of cancer, who represented the 800,000 in this country who have been cured.

Dr. Heller told of one drug, methotrexate, which has successfully suppressed a solid tumor for the first time. He said the drug was used with "considerable success" on 17 women suffering with chorio-carcinoma, a relatively rare but almost always fatal form that develops in women following childbirth. One of those treated has been free of the disease for almost three years.

Work of the Cancer Chemotherapy National Service Center at Bethesda, Md., also was explained by Dr. Heller. There chemicals and compounds are being screened at the rate of 45,000 a year to learn if they have any potential value in treating cancer. From this program have come several drugs and chemicals that show "good possibilities," according to Dr. Heller. Forty-four of the new drugs are now being tried clinically.

The meeting, which marked the opening of this year's fund drive by the American Cancer Society, heard Dr. Lowell T. Coggeshall explain that while the cancer death rate for women has decreased, the rate for men has increased because of a sharp increase in lung cancer.

RULES FOR TRANSPORTATION OF MIGRANT WORKERS

The Interstate Commerce Commission will shortly start widespread distribution of a new pamphlet giving federal regulations for the interstate transportation of migrant workers, based on a federal law extending the U. S. authority in this area. The new law brings under federal supervision private carriers, including crew leaders, recruiters, labor contractors, or employers who transport agricultural workers across state lines.

Medicine is particularly affected because new medical examinations are required of all drivers who (*a*) transport workers more than 75 miles or cross state lines, and (*b*) haul three or more workers who are not members of their families, and (*c*) transport the workers in a vehicle other than a passenger automobile or station wagon.

The pamphlet informs drivers that they will be required to "carry with you at all times a certificate from your doctor indicating that you have passed the examination, and that you have no defects which could interfere with your driving. . . ." The pamphlet gives specific instructions to the doctor as to minimum physical standards for drivers. These drivers now come under the definition of "common carriers" and therefore are subject to Interstate Commerce Commission control.

The A. M. A.'s Council on Rural Health for years has been concerned with health of migrants and health aspects of their working and living conditions.

MISCELLANY

Hearings are now under way before a Senate appropriations subcommittee on the appropriation bill for the Department of Health, Education, and Welfare for the fiscal year starting July 1. The measure—carrying increases over Budget Bureau recommendations for research—passed the House without change. Increases had been voted by the House Appropriations Committee.

The U. S. Office of Education warns that "students should not experiment with rockets and other missiles unless such activity is as rigidly controlled and as expertly supervised as are experiments by rocket scientists and engineers." The office points out that some propellant fuels are extremely hazardous and that some experiments conducted by youngsters "would be dangerous even if attempted by professional rocket experts."

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TREATMENT OF IDIOPATHIC THROMBOCYTOPENIC PURPURA (ITP) WITH PREDNISONE

William Dameshek, M.D., Fernando Rubio Jr., M.D.
John P. Mahoney, M.D., W. Harrison Reeves, M.D.
and
Leonard A. Burgin, M.D., Boston

Prednisone was used in the treatment of 30 consecutive patients with ITP (idiopathic thrombocytopenic purpura) under conditions that permitted the establishment of a satisfactory base line for metabolic and hematological studies, especially as to platelet count and other coagulation studies. Eleven cases were of the "acute," and 19 cases of the chronic type. The initial dose of prednisone varied between 20 and 150 mg. per day, given by mouth. The results ranged from complete absence of response to sustained remission without apparent need of further treatment. In 22 of the 30 cases the platelet count rose from the initial low values to normal in 6 to 150 days. Much individual adjustment of dosage was necessary. Maintenance dosages ranged from 2.5 to 15 mg. per day, but in eight patients it was possible to withdraw the prednisone entirely after establishing a normal platelet count. Splenectomy was performed in five patients of this series but was followed by complete, sustained remission in only one case. These results lead to the conclusion that in the treatment of ITP chief reliance should be placed upon such measures as prednisone therapy and transfusions, splenectomy being reserved for the occasional severe cases that do not respond to medical measures.

THE TREATMENT of idiopathic thrombocytopenic purpura (ITP) has never been fully satisfactory. Kaznelson's [1] major contribution of 1916 indicated that splenectomy could induce a spectacular increase in blood platelets. However, as experience with this operation increased, it became apparent that the rise in platelets was often a transient one and that relapses to the original low levels might take place three months, one year, or even several years after splenectomy.[2] There was, furthermore, the not inconsiderable risk attending the operative procedure, particularly if this was undertaken in an acute bleeding phase of the disease and as an emergency measure.[3] In recent years, the danger of fatal, usually cerebral, bleeding in the course of ITP has been considerably reduced by the introduction of two "medical" methods, i. e., the use of siliconized bottles or plastic bags for transfusion of fresh whole blood, including viable platelets, and the use of ACTH and the corticosteroid hormones. It has been adequately demonstrated that with these two measures even the acute cases of ITP, with severe bleeding into the skin and mucous membranes, can be kept under good control and tided over the hemorrhagic crisis, usually a matter of a few to several days.[4]

The effects of ACTH and later of cortisone on the bleeding disorder appeared to be mediated largely through the small blood vessels.[5] Thus, striking improvement in the bleeding tendency usually took place even without a rise in platelets. In some cases, however, a marked rise in platelets oc-

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From the Blood Research Laboratory, unit of the Ziskind Laboratories, New England Center Hospital, and the Department of Medicine, Tufts University School of Medicine. This work was done during the tenure of a U. S. Public Health Service, National Cancer Institute Traineeship by Dr. Mahoney, and a U. S. Public Health Service, National Heart Institute Postdoctoral Fellowship by Drs. Reeves and Burgin.

curred shortly after institution of steroid therapy. Whether this was due to the therapeutic agent or represented a coincidental spontaneous rise in blood platelets was often uncertain, especially in the acute cases, although in some cases, there seemed little doubt that the rise in platelets was due to steroid administration. Our own studies indicated that, although ACTH and cortisone were of distinct value in diminishing bleeding, they were of uncertain value in initiating a rise in platelets.[4a] Thus, the use of these agents in ITP during a period of approximately five years led us to conclude that splenectomy was still the specific method of therapy in those cases continuing at low platelet levels for more than four to six months and that steroid therapy was chiefly valuable as a nonspecific "antihemorrhagic" agent.[4a]

In the past few years, as it became increasingly apparent that the initial remissions after splenectomy were followed by increasing numbers of relapses, a reevaluation of the effects of the steroids in ITP, with particular reference to the blood platelet count, seemed desirable, especially when the new steroid, prednisone (Meticorten), became available. Since it was possible to use this material in large, even massive doses and with minimal water retention, a series of consecutive cases of ITP was treated. It was soon evident that striking rises in platelet level took place with great consistency, whether the patient's condition was acute or chronic or had relapsed after splenectomy. In this paper, we report the results of the use of prednisone in the treatment of 30 consecutive cases of ITP treated during 1955 to 1957. Analysis of the results indicates that the treatment of ITP by splenectomy may eventually become of secondary importance as "medical" therapy for this disorder is increasingly perfected.

Therapy with Prednisone

Therapy with prednisone was instituted after an appropriate baseline of hematological values had been obtained, usually with the patient in the hospital. Prednisone was supplied in slotted 50-mg. tablets which were given by mouth, usually in divided doses. In addition to hematological and hemorrhagic studies, various clinical observations were made, and in a number of cases detailed metabolic, renal, and electrolyte studies were performed. Platelet counts were performed by the method described by one of us,[6] in which the normal platelet level varies from 400,000 to 800,000 per cubic millimeter. The initial dose of prednisone varied from case to case; doses of 20 to 250 mg. per day were used. After a normal platelet count had been established, the dose of the drug was decreased and then gradually reduced to levels of 2.5 to 15.0 mg. or withdrawn entirely. In a few cases, the dose was titrated to fit the rising or falling platelet level. Cases were classified as "acute" or "chronic" according to the criteria set forth in a previous paper,[7] with the reservation kept in mind that the distinction between an "acute, self-limited" case and a "chronic" one is often difficult and at times impossible to determine.

The results of therapy in this group of patients with idiopathic thrombocytopenic purpura are summarized in the table and figure 1. The terms complete remission, incomplete remission, and slight or no response refer to the platelet count. All the patients who had complete remissions obtained and maintained normal platelet counts. Those who developed incomplete remissions had platelet counts from one-third to nearly normal values. In every patient, there was prompt and marked improvement in the hemorrhagic symptoms and return of the bleeding time to normal or nearly normal values. This effect always preceded or occurred independently of changes in the platelet level. The initial platelet counts in this series of cases were at extremely low levels: 0 to 53,000 per cubic millimeter with three exceptions, patients 20, 21, and 25 whose platelet counts were 90,000, 100,000, and 82,000 respectively. Eleven cases were of the acute type and nineteen were chronic. Of the latter, two patients had had relapses after previous splenectomy.

Normal platelet counts were attained in 6 to 150 days in 22 of the 30 cases. These took place in 10 of the 11 acute cases after an average of 22.4 days of treatment. In the chronic cases, completely normal platelet counts were obtained after an average of 50 days of therapy in 12 of the 19 cases. In addition, in two other cases classified as chronic (1 and 29) the platelet level rose to almost normal values of 374,000 and 366,000 per cubic millimeter respectively. In the remaining six patients, the platelet level was considerably improved in two, and little or no change occurred in the platelet count in four, two of whom (cases 17 and 20) received massive doses of steroid therapy (200 to 250 mg. daily). Initial response to therapy with prednisone took place very quickly in 10 of the 11 patients with acute conditions, as indicated by a definite increase in platelets (usually to one-fourth or one-third of normal values), and averaged 9.4 days. In the 12 patients with chronic conditions who attained normal platelet counts, the results were more variable—from 6 to 60 days with an average of 15.3 days. In the two patients who had had previous splenectomy, complete remissions occurred at 14 and 30 days respectively.

When the doses of prednisone were reduced (2.5 to 10 mg. daily), reduction in the platelet count took place frequently. Of the 24 patients who obtained normal or nearly normal platelet counts and in whom the drug was subsequently reduced or withdrawn after the initial course of therapy, relapse to previous low platelet levels took place in 7 patients in 18 to 120 days. The actual intervals were as follows: 20, 18, 60, 22, 24, 120, and 18 days.

It is of interest that in five of these cases the relapse occurred in approximately 20 days. The longest interval occurred in the patient in case 5, who had previously undergone splenectomy. In an additional five cases, a modest but significant drop in platelet level took place when the dose of prednisone was reduced to low levels, although the platelet count never approximated the pretreatment low values. In these cases, too, the drop in platelet level took place 10 to 30 days after the prednisone dosage had been reduced.

When relapse had occurred, after either withdrawal of prednisone or reduction to low dosage, therapy with higher dosage was again instituted and excellent responses again took place (seven out of the seven above-mentioned cases). In those cases in which sufficient data could be obtained, the new remission took place within 10 to 20 days after institution of therapy. It was then possible in most cases to adjust or maintain the platelet count at either normal or at somewhat less than normal values by variation of the maintenance dose of steroid between 2.5 to 15.0 mg. daily. Because of the well-known effects of continued steroid therapy, the attempt was always made to reduce the dosage to at least 5 to 10 mg. daily. In several instances, when normal levels of platelet counts had been reached and had been maintained by a dose of

Summary of Clinical Data in Thirty Patients with ITP Treated with Prednisone

Case No.	Age, Yr.	Sex	Initial Platelet Count/ Cu. Mm.	Dose, Mg.		Initial Response to Therapy		Subsequent Course, Present Status
				Initial	Largest	Days	Platelet Level, Cu. Mm.	
1	8	M	9,000 Chronic*	30	Same	8	374,000	Relapse without therapy; incomplete remission; maintenance therapy required
2	17	M	12,900 Acute*	50	100	16	450,000	Complete remission sustained without further therapy
3	13	F	21,300 Acute	60	Same	6	636,000	Relapse without therapy; splenectomy; complete remission without further therapy (see case report)
4	13	M	25,000 Acute	40	150	30	400,000	Complete sustained remission without further therapy
5	27	F	35,000 Chronic†	30	Same	60	468,000	Sustained remission with maintenance therapy (see case report)
6	73	M	8,000 Chronic	80	Same	9	450,000	Relapse without therapy; incomplete remission; no further therapy given due to psychiatric disturbance.
7	7	F	7,000 Chronic	20	Same	6	480,000	Sustained remission; no further therapy required
8	33	F	23,000 Chronic	100	Same	7	574,000	Sustained remission; no further therapy required
9	49	F	8,000 Acute	100	Same	4	450,000	Relapse on reduced dosage; splenectomy; incomplete remission; refused further therapy (see case report)
10	50	F	19,000 Acute	150	Same	6	580,000	Relapse without therapy; second remission sustained with maintenance therapy (see case report)
11	62	F	12,000 Chronic	20	100	75	400,000	Sustained remission with maintenance therapy (mild diabetes and hypertension)
12	23	F	22,000 Chronic	50	Same	15	456,000	Sustained remission; no further therapy required
13	40	F	9,000 Acute	100	Same	6	550,000	Relapse without therapy; splenectomy; relapse third remission sustained with maintenance therapy (see case report)
14	43	F	15,000 Chronic†	100	Same	60	550,000	Sustained remission with maintenance therapy (see case report)
15	3	F	5,000 Acute	30 with ACTH	Same	8	570,000	Sustained remission; no further therapy required
16	14	M	19,000 Chronic	50	Same	10	1,000,000	Relapse without therapy; second remission with therapy sustained; no further therapy required
17	45	F	9,000 Acute	30	250	75	20,000	Very slight response; splenectomy; incomplete remission; no further therapy required
18	43	F	13,000 Chronic	50	Same	30	430,000	Sustained remission with maintenance therapy
19	26	F	8,000 Chronic	100	Same	60	450,000	Sustained remission with maintenance therapy
20	40	M	90,000 Chronic	50	200	90	120,000	Prompt but short lived remission with splenectomy; no further therapy required (see case report)
21	43	F	100,000 Chronic	20	Same	150	460,000	Complete remission with maintenance therapy
22	19	F	4,000 Acute	75	Same	120	510,000	Complete remission with maintenance therapy
23	5	M	53,000 Chronic	25	50	120	150,000	Incomplete remission with maintenance therapy for four months
24	47	M	42,000 Chronic	50	Same	21	200,000	Incomplete remission with maintenance therapy for four months
25	53	F	82,000 Chronic	50	Same	11	650,000	Complete remission with maintenance therapy (hypotension)
26	1½	F	30,000 Acute	25	Same	21	620,000	Complete remission with maintenance therapy
27	38	M	"None" Acute	100	Same	7	554,000	Complete remission with maintenance therapy
28	11	F	30,000 Chronic	15	50	8 mo.	50,000	No response
29	28	F	30,000 Chronic	50	100	120	366,000	Incomplete remission with maintenance therapy
30	1	M	30,000 Chronic	20	50	6 mo.	40,000	Very slight response with maintenance therapy

* "Acute" and "chronic" refer to diagnosis at time of our first examination.
† Postsplenectomy.

5 mg. of prednisone daily, it was a difficult matter to decide whether further therapy should be continued. No exact rule was followed, and in some cases withdrawal of steroid was eventually regretted since later it was again necessary to return to the relatively high starting dose of steroid.

NATURE OF RESPONSE	NUMBER OF PATIENTS	SUBSEQUENT COURSE	NUMBER OF PATIENTS
COMPLETE REMISSION	20	SUSTAINED REMISSION (12-24 months) NO FURTHER THERAPY	8
PREVIOUS Ⓢ 2 SUBSEQUENT Ⓢ 2		SUSTAINED REMISSION (8-24 months) WITH MAINTENANCE THERAPY	10
		REMISSION FOLLOWED BY RELAPSE Ⓢ→ REMISSION	1
		RELAPSE, 2nd REMISSION WITH Ⓢ RELAPSE, 3rd REMISSION	1
INCOMPLETE REMISSION	6	NO FURTHER THERAPY	1
PREVIOUS Ⓢ 0 SUBSEQUENT Ⓢ 1		MAINTENANCE THERAPY	4
		INCOMPLETE REMISSION WITH Ⓢ	1
SLIGHT RESPONSE	4	INCOMPLETE REMISSION WITH Ⓢ	2
PREVIOUS Ⓢ 0 SUBSEQUENT Ⓢ 2		CONTINUED THERAPY	2

Fig. 1.—Summary of results in 30 patients with ITP treated with prednisone. S = splenectomy.

In eight cases, it was eventually possible to discontinue prednisone therapy completely without a further drop in platelet level. Of these eight cases, four were of the chronic variety, in which normal platelet counts are rarely noted without therapy. We anticipate that eventually we will be able to discontinue prednisone therapy in many of the patients who are in a state of complete remission on maintenance therapy. The following case report illustrates some of these points.

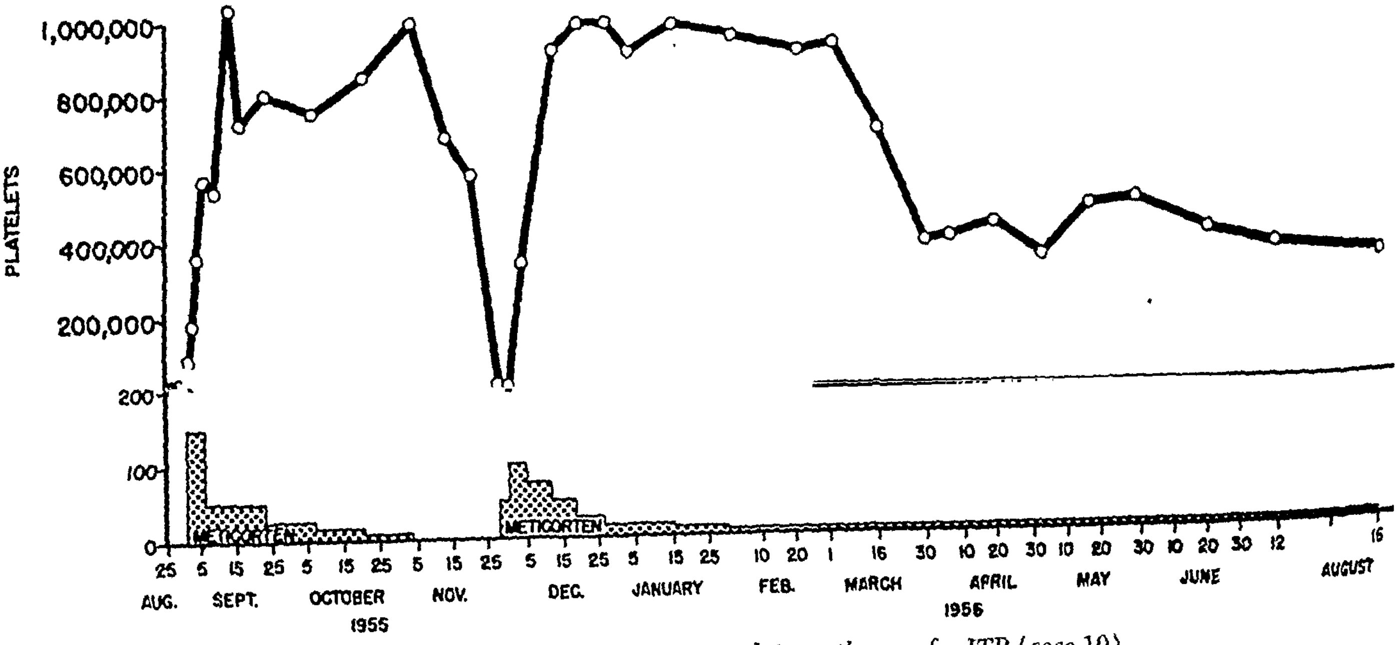

Fig. 2.—Blood platelet levels during prednisone therapy for ITP (case 10).

Case 10.—A 50-year-old woman was admitted to the New England Center Hospital on Aug. 26, 1955. She had noted fleeting purpura and easy bruisability three months prior to admission. Three weeks before admission, there was a marked accentuation in her course with increasing purpura. Physical examination revealed scattered ecchymoses and a few petechiae of the buccal mucosa. Laboratory studies showed a platelet count of 19,000 per cubic millimeter with an increased number of apparently inactive megakaryocytes in the bone marrow. The remainder of the blood picture was within normal limits. Therapy with prednisone, 150 mg. per day, was started, and there was a very rapid response in the platelet level; within two days, the platelet count was 100,000 and within six days, 580,000 per cubic millimeter. The medication was gradually tapered off and discontinued after nine weeks. Twenty-four days after prednisone was withdrawn the platelet count dropped abruptly. A second course of the therapy again produced a quick rise in platelet values to normal. A complete remission has been maintained for 20 months (October, 1957) with the continued use of prednisone in a dose of 5 mg. daily (fig. 2).

Splenectomy as Therapeutic Measure in Five Cases

Case 17.—A 45-year-old housewife was first admitted to the New England Center Hospital on Aug. 23, 1956, having had a purpuric rash for one month, which had not responded to prednisone in a dose of 15-20 mg. daily. She had taken no other medicament except for digitalis, 0.1 Gm. daily, for chronic auricular fibrillation in association with rheumatic mitral stenosis. She had never had quinidine. On examination, the patient appeared healthy and had excellent color. Many petechiae of the gums and mucous membranes were present. Auricular fibrillation (rate ± 90) was present. There was a short mitral diastolic murmur. No evidence of cardiac decompensation was present. The skin was covered with numerous ecchymoses and petechiae. The blood platelet level was extremely low (9,000 per cubic millimeter) in the presence of otherwise normal blood cell counts. The bone marrow contained normal numbers of apparently inactive megakaryocytes.

Prednisone was given in a dose of 100 mg. daily for 14 days without effect on the platelet level. There was a diminution in bleeding tendency, although the bleeding time continued to be somewhat prolonged. Prednisone therapy was then continued with a dose of 50 mg. daily for one month, again without effect. The patient was then rehospitalized and the dose of prednisone raised to 250 mg. daily for 12 days. Again no significant rise in platelets took place, although the bleeding time became normal. Because of the lack of response, splenectomy was finally carried out approximately three and one-half months after the onset of her illness, cortisone being given intramuscularly just before operation and during the immediate postoperative course.

Cortisone was then gradually withdrawn, and the platelet level rose slowly during the first postoperative month to normal values. The end-result in this case remains uncertain, since there has been a steady drop in her platelet level (fig. 3).

Case 3.—A 13-year-old girl suddenly developed a spontaneous episode of epistaxis lasting for one-half hour three months prior to admission. There were petechiae, numerous ecchymoses, and mild menorrhagia. Physical examination on admission was normal save for numerous ecchymoses scattered over the abdomen, chest, and extremities. The platelet count was extremely low (20,000 per cubic millimeter), and the bone marrow preparation showed increased numbers of apparently inactive megakaryocytes. The patient was given two transfusions of fresh blood collected in plastic bags and ACTH in a dose of 100 units daily for four days, after which prednisone, 60 mg. daily, was given. The platelet count rose rapidly in 12 days to 750,000 and in about a month to 1 million per cubic millimeter. All hemorrhagic manifestations ceased. When the dose of prednisone was gradually reduced and then withdrawn, the platelet count again fell to the previously very low levels.

During the period of prednisone therapy, the patient gained 20 lb. (9 kg.) in weight and showed the features of marked hyperadrenocorticism. When the hemorrhagic manifestations recurred, prednisone was again resumed in doses of 10-15 mg. daily. There was a transitory rise of platelets to 400,000, but the Cushingoid reaction was again quite marked. Splenectomy was then performed, and cortisone was given intramuscularly in a dose of 100 mg. daily. The platelet count rose rapidly to levels of 1,500,000 to 3,500,000 per cubic millimeter and then leveled off at 1,400,000 to 1,700,000 without further treatment (fig. 4).

Although an excellent platelet response took place in this apparently acute case with steroid therapy, the development of symptoms of marked hyperadrenocorticism interfered with continued therapy with prednisone, and splenectomy was therefore performed. An extreme thrombocytosis developed, perhaps due partly to the corticosteroids, perhaps to the splenectomy, or to a combination of those two procedures. This case was treated early in our series, and in retrospect, the actual necessity for splenectomy in a child of 13 only seven months after the development of the first attack of bleeding is open to question, since at the time of splenectomy, no obvious hemorrhagic manifestations were present, and complete remission in such cases may occur even at the end of a year.

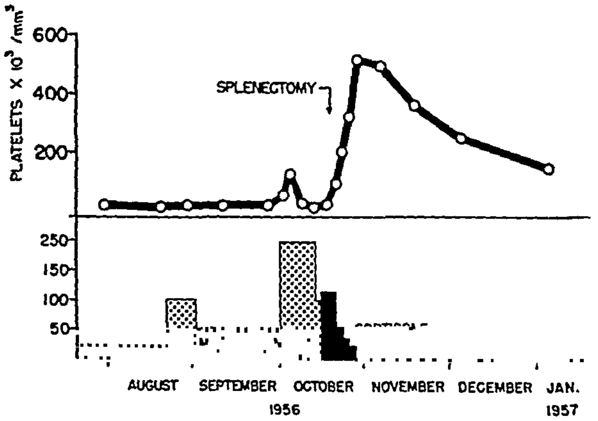

Fig. 3.—Failure of blood platelet levels to respond to prednisone therapy for ITP (case 17).

Case 9.—A 49-year-old woman developed petechiae and ecchymoses about one month prior to her admission. Save for these, physical examination was negative. Blood studies showed 8,000 platelets per cubic millimeter, and bone marrow aspiration revealed normal numbers of megakaryocytes, which seemed inactive. On prednisone therapy (100 mg. daily), the platelet count rose to 450,000 per cubic millimeter, but when the dose of steroid was reduced to 50 mg. daily, the platelet count again dropped to its original low level. Splenectomy was decided upon because of the apparent failure of prednisone therapy. The platelet count rose to 800,000 per cubic millimeter and remained at this level for two months. However, six months after splenectomy, the platelet count had dropped to 200,000 and nine months after operation there was a further drop to approximately 100,000 per cubic millimeter.

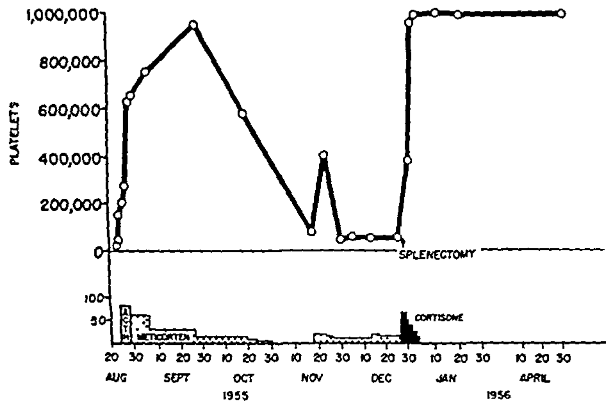

Fig. 4.—Excellent and sustained remission of blood platelet levels after splenectomy, which may have been unecessary (case 3).

A good response in this case took place when prednisone in a dose of 100 mg. daily was given, but relapse occurred on 50 mg. Splenectomy was apparently productive of a good remission, but six months after splenectomy the patient was again in relapse. Thus, splenectomy was by no means the answer to the problem of thrombocytopenia in this case. This case may also be considered a relative failure of prednisone therapy, since on a dosage of 50 mg. daily relapse in platelet level took place.

Case 13.—A 40-year-old woman suddenly developed purpura, bleeding gums, and menorrhagia about four weeks before admission. Examination was negative except for numerous ecchymoses. The platelet count was practically nil, although the bone marrow showed numerous apparently inactive megakaryocytes. Treatment with prednisone, at first in a dose of 100 mg. daily, was quickly followed by a rise in platelet count to 600,000 per cubic millimeter. On 5 mg. of steroid daily, the platelet count was maintained at levels between 400,000 to 600,000, but when prednisone therapy was discontinued, the platelet count dropped to 50,000 per cubic millimeter. With reinstitution of prednisone therapy in smaller doses, the platelet level did not improve significantly, but when the dose was raised to 75 mg. daily there was again a rise in platelet count to 1 million per cubic millimeter. It was felt that, since large doses were necessary to induce a normal platelet level, splenectomy should be performed. This was carried out in March, 1956, but was followed by a gradual relapse in the bleeding tendency and thrombocytopenia. In September, 1956, prednisone, 50 mg. daily, was again instituted and resulted in a striking remission within eight days. The dose of prednisone was then gradually reduced to 7.5 mg.; by trial and error it was eventually found that a reasonably normal platelet level could be maintained on 10 mg. of the steroid (fig. 5).

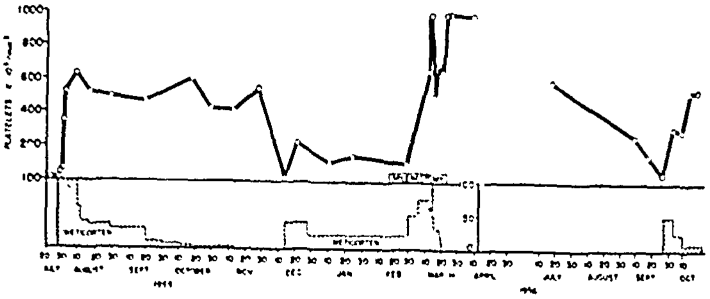

Fig. 5.—Relapse in blood platelet levels six months after splenectomy, and remission with prednisone therapy for ITP (case 13).

In this case prednisone was effective in two relapses, but splenectomy was nevertheless performed and prednisone withdrawn. Relapse occurred after splenectomy after a six-month remission. Splenectomy in this case was without lasting benefit, but when prednisone therapy was again resumed, the platelet count rose to normal and has remained reasonably normal since on small daily doses of prednisone (5-10 mg.).

Case 20.—A 40-year-old man was referred in November, 1956, for therapy of idiopathic thrombocytopenic purpura of at least 18 years' duration. The patient had first noted spontaneous petechiae and ecchymoses in 1938 and since then *had never been free of them*. There had been no other hemorrhagic symptoms except for profuse bleeding after minor surgical procedures including dental extractions. In October, 1956, a biopsy of a benign mandibular cyst was performed at another hospital, and the patient experienced profuse bleeding. The platelet count at that time was stated to be between 20,000 and 40,000 per cubic millimeter. Prednisone in a dose of 15-20 mg. per day was given with a marked improvement in the bleeding tendency. Further mandibular surgery was contemplated in the future.

On examination by us, the patient showed numerous petechiae about both ankles and marked pigmentation of the shins and dorsa of both feet; in addition, several small ecchymoses were present. The remainder of the examination was negative. The blood cell counts were as follows: hemoglobin level, 14.5 Gm. per 100 cc.; red blood cell count, 5,200,000; white blood cell count, 7,200, with a normal differential count. The platelets numbered 90,000 per cubic millimeter. The bone marrow contained numerous megakaryocytes although there appeared to be but little platelet production. The Coombs test was negative and no platelet agglutinins were demonstrated.

On Nov. 6, 1956, the dose of prednisone was increased to 50 mg. per day. Three weeks later the platelet level was 100,000 per cubic millimeter. Prednisone was increased to 200 mg. per day for 10 days without significant change in the platelet level. The dose was gradually reduced to 50 mg. per day, but by the middle of February, 1957, no significant rise had occurred in the platelet level. On Feb. 19, 1957, splenectomy was performed with the aid of two transfusions of fresh blood from plastic bags. On the next day the platelets numbered 1,200,000 per cubic millimeter. Prednisone, in a dose of 25 mg. per day, was continued for two weeks and then gradually reduced and eventually withdrawn in March. Excision of the mandibular cyst was carried out in April without incident. By July, the patient's platelet count had dropped to 300,000 per cubic millimeter, but he was entirely free of bleeding manifestations.

In this example of chronic ITP there was a three-month course of prednisone therapy in large doses with little effect on the platelet level. Splenectomy brought about a prompt and striking rise in platelet count. Five months later, the platelet level was somewhat below normal, indicating that the ultimate result of splenectomy was uncertain.

Therapy with Prednisone After Previous Splenectomy

Case 5.—A 27-year-old woman developed severe menorrhagia and spontaneous ecchymoses four months before admission to her local hospital. The uterine bleeding was massive, requiring 13 transfusions, and subtotal hysterectomy was performed. After operation, thrombocytopenia was discovered for the first time and the patient was treated with cortisone in a dose of 400 mg. daily. An improvement in bleeding tendency took place, but there was no rise in platelet count. Because of this, the patient was referred to our care. Examination revealed numerous ecchymoses and petechiae of skin and mucous membranes, and there was continued vaginal bleeding. Neither the liver nor spleen was palpable, and the remainder of the examination was negative. The platelet count was 13,000 per cubic millimeter; the marrow aspiration revealed normal or inactive megakaryocytes, without apparent platelet production. Splenectomy was performed in June, 1954, with a transient rise in platelets to 500,000 per cubic millimeter, but within 15 days the platelets had again dropped to low levels (60,000-80,000). Cortisone, at first in a dose of 200 mg. daily, later in smaller doses, was given but without effect. The drug was eventually withdrawn on Dec. 10, 1954.

The patient was relatively free of hemorrhagic symptoms from that date until September, 1955, when she again developed severe ecchymoses and petechiae with bleeding from the nose, gums, and vagina. The platelet count at this time was approximately 40,000 per cubic millimeter. Prednisone was given in an initial dose of 30 mg. daily, subsequently 20 and 15 mg. daily. There was a quick improvement of bleeding symptoms, and the platelet count rose in two months to 468,000. When the prednisone dosage was reduced to 10 mg. daily, the platelet count dropped to 300,000. The dose of prednisone was *raised* to 25 mg. daily,

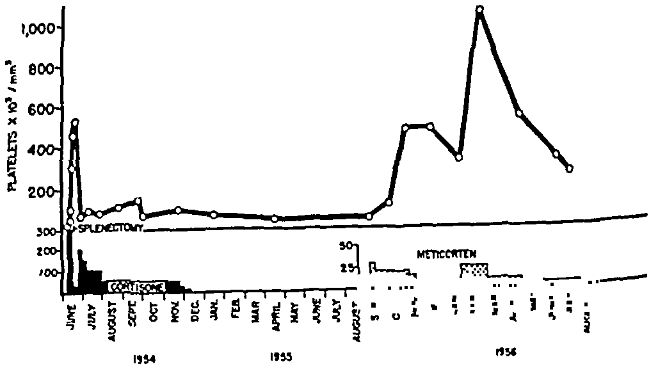

Fig. 6.—Remission of blood platelet levels with prednisone therapy for ITP after failure to respond to splenectomy and cortisone therapy (case 5).

and one month later (March, 1956) the platelet count rose to 1 million. Prednisone was gradually tapered to 5 mg. daily, and on this dosage there was a slow but progressive drop in platelet count to 350,000 (November, 1956) but without recurrence of bleeding manifestations (fig. 6). During the past year (November, 1957), the platelet count has remained between 350,000 and 450,000 per cubic millimeter. Prednisone has been continued in a dose of 5 mg. daily.

In this case, as with many others presenting severe menorrhagia due to thrombocytopenia, hysterectomy had been performed without benefit. Splenectomy was thereupon performed with only a minor remission lasting for about two weeks. When relapse occurred, prednisone was given with an excellent response. Withdrawal of prednisone was followed by relapse, and again remission was secured when prednisone was resumed. Eventually, small doses of prednisone sufficient to keep the platelet count at nearly normal values were used, and the patient remained free of all hemorrhagic manifestations. This case illustrates several points: (1) the ineffectiveness of cortisone in raising the platelet count, (2) the ineffectiveness of splenectomy, (3) the effectiveness of prednisone, and (4) the lack of necessity for maintaining the platelet level at completely normal values, thus allowing the use of very small doses of prednisone for maintenance.

Case 14.—A woman, aged 43, developed the typical features of ITP in 1943, and splenectomy was performed (in Montreal). There was apparently complete remission until 1948 when all the various manifestations of the disease recurred in great severity. Between 1950 and 1956, ACTH and cortisone in moderate doses were used either intermittently or regularly without significant effect on the platelet count, which varied between 20,000-50,000 per cubic millimeter. There was constant severe menorrhagia and many ecchymoses of the skin. In September, 1954, when first seen in Boston, the patient had all the features of ITP both in blood (platelet count, 26,000 per cubic millimeter) and bone marrow; nothing specific was recommended. In June, 1956, when she returned for reevaluation, she complained of severe menorrhagia, some bleeding from the nose and gums, and frequent ecchymoses and petechiae. The platelet count was 30,000 per cubic millimeter. Bone marrow aspiration revealed marked megakaryocytosis with apparently reduced activity in platelet production. Therapy with prednisone, at first in a dose of 100 mg. daily, then gradually reduced to 25 mg. daily, resulted in a rise in the platelet count to 275,000 in two weeks and to 550,000 in the course of two months. With continued therapy of 10 mg. of steroid daily, the platelet level rose to 800,000 per cubic millimeter, and the dose was reduced to 5 mg. daily. There was a complete disappearance of all bleeding tendency and the development of a scanty menstrual flow (fig. 7).

In this patient who had a relapse after splenectomy for ITP with severe bleeding tendency, the continued use of ACTH and cortisone, in the dosages used, was without effect, but prednisone was productive of an excellent remission.

Except possibly in three cases, a comparative study of the effects of prednisone and cortisone on the platelet level could not be made. In case 5, treatment with cortisone in a dose of 400 mg. daily was instituted when thrombocytopenia was first found after hysterectomy. There was an improvement in the vaginal bleeding, but no effect on the platelet count was noted. Later, after the failure of splenectomy to raise the platelet level, cortisone was again given in a dose of 200 mg. daily, again without significant effect on the platelets. However, when prednisone was given in a dose of 25-30 mg. daily, a dramatic rise in platelets took place. In this case, the superiority of prednisone over cortisone seemed unequivocal. In case 7, ACTH, followed later by cortisone, was productive of a striking remission, but when cortisone therapy was discontinued, the platelets fell to their original low values. Prednisone in relatively small doses was followed by another remission, which has been sustained for six months, although therapy was discontinued. Since ACTH was used first and was followed by a rise in platelets before cortisone was given, a comparison of prednisone-cortisone effects is impossible here.

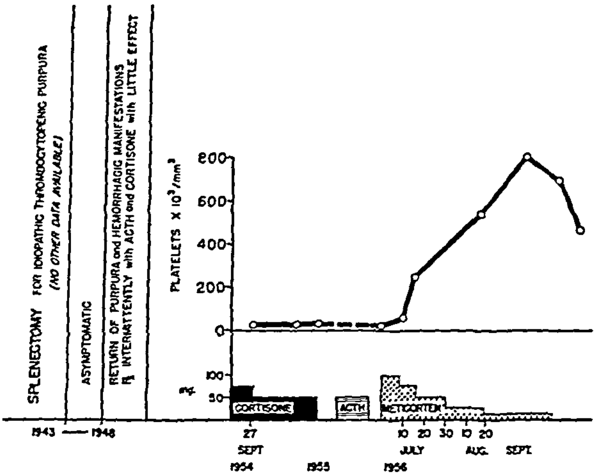

Fig. 7.—Excellent remission of blood platelet levels with prednisone therapy for ITP 13 years after splenectomy.

In case 14, with relapse after splenectomy, moderately large doses of ACTH and cortisone were used intermitently for a few years but without any significant effect on the platelets; however, when prednisone was used, a striking remission took place.

From these three cases, a definite comparison of cortisone-prednisone effects is possible only in case 5, in which large doses (400 mg.) of cortisone were without effect before splenectomy, and 200 mg. of the same steroid were ineffective after splenectomy; prednisone in relatively small doses (25-30 mg.) resulted in a marked rise in platelets. Prednisone was also strikingly effective in case 14, after the previous ineffectiveness of cortisone therapy; here, however, a dosage effect may have been operative since prednisone was used initially in a dose of 100 mg. daily.

Comment

There can be little question regarding the rather consistent effect of prednisone in causing striking rises in the platelet count in this series of cases of ITP. Of the 30 cases, completely normal platelet levels were attained in 22 (73%). The effect of prednisone on the platelets was noted not only in 10 patients out of the 11 acute cases (90%) in which spontaneous remissions are a common occurrence, but also in 12 patients out of the 19 chronic cases (60%), as well as in those who had had a relapse after splenectomy. The time interval between the beginning of prednisone therapy and the development of a well-defined rise in platelets was relatively constant, averaging 9 days in the acute cases and 16 days in the chronic ones, whether or not splenectomy had previously been done. There was furthermore a rather striking constancy in the time interval between withdrawal of therapy and the reappearance of the thrombocytopenia. This was approximately 20 days in the cases in which this matter could be studied. Similarly, in the cases in which the platelet count fell when the dose of prednisone was reduced to 5-10 mg., low levels were attained within 10 to 30 days. This ability of prednisone to raise the platelet level has in some cases been of life-saving value, as in the case of an extremely obese woman with severe hypertension (case 11). Here, expectant therapy with prednisone led to an eventual complete remission; splenectomy in this case might well have been disastrous.

The consistent effect of prednisone in raising the platelet level in these cases of ITP has been a striking phenomenon; its mechanism is by no means obvious. A direct (inhibitory?) effect on the spleen can be ruled out because the steroid was effective even in the absence of the spleen. Was the effect due to a stimulatory one on the megakaryocytic production of platelets or to a reduction in thrombocytopenic factor, which is presumably of immunological nature? This is by no means clear and requires further study, but in view of the demonstration by several groups of workers of an immunological mechanism in ITP[8] and the well-known effects of the corticosteroids in inducing a reduction in antibody concentration, not only with the infectious antibodies but with the antibodies of "autoimmune" hemolytic anemia, it seems more likely to us that prednisone acts through depression of antibody production. We have commented previously on the many similarities between autoimmune hemolytic anemia and ITP.[9]

The striking rise in platelets in acute ITP in approximately 9 days after the beginning of prednisone therapy, and in chronic ITP in approximately 22 days, and the fall in platelets in approximately 20 days when the steroid therapy was discontinued may also be cited as indicating that the effects of prednisone were on antibody formation (and therefore on its concentration in the blood stream) with the ultimate effect as noted on the platelets. Thus, the latent period occurring before the rise in platelets could be due to the time required to reduce antibody sufficiently so that platelet survival time could become relatively normal. Likewise, the latent period occurring between withdrawal of prednisone and the drop in platelets might conceivably be due to the ensuing gradual rise in antibody concentration in the blood and its ultimate effect on the platelets.

The relative constancy of the effect of prednisone as compared to the inconstant effects of ACTH and cortisone is of considerable interest. Although it is impossible to make any completely definitive statement as to the relative merits of prednisone versus ACTH or cortisone in this series of cases, we have been considerably impressed with the relatively certain and predictable effects of prednisone, whereas in our previous use of ACTH and cortisone, even in large doses, the results on the platelet level were decidedly uncertain. This may conceivably be a "dosage" effect (e. g., prednisone, milligram for milligram, is purported to have three to five times the activity of cortisone), or it may possibly be due to the difference in the steroid molecule. In view of the results in case 5, in which both 400 and 200 mg. of cortisone were strikingly ineffective and a small dose of prednisone (30 mg.) highly effective, the "dosage" effect seems unlikely and a difference of effect is probable. Prednisone is an artificially created (i. e., synthetic) material and not naturally produced by the adrenal gland It may thus have some specific quality making it unusually active against the thrombopenic factor found in that disease. This possibility requires further study, and of course even with the above statements in mind, one cannot rule out completely the possibility that the prednisone molecule acts in a quantitative (i. e., dosage) fashion rather than in a qualitative one.

While in the past we have stressed the difference between "acute" and "chronic" cases of ITP,[7] not only as regards their clinical course but also with respect to their response to therapy, this distinction takes on a different meaning when the results of prednisone therapy are analyzed. The problem may be restated in this fashion: At the time the patient is first examined, the fact that the hemorrhagic symptoms are of short duration (i. e., acute) and apparently never previously present is of little prognostic value in predicting the future course. On the other hand, in young people and children, the appearance of ITP two to three weeks after a well-defined infectious state indicates that the hemorrhagic disorder will in most instances clear up spontaneously. Here steroids might still be used to "speed up" a spontaneous type of remission. In all other situations, the response to prednisone could not be correlated with either the acuteness or the chronicity of the hemorrhagic process. Thus, our former belief that the diagnosis of chronic ITP was an almost invariable indication for splenectomy needs modification.

In view of the rather constant effects of prednisone and the increasingly inconstant effects of splenectomy, to say nothing of the fact that the operation of splenectomy presents certain hazards, what should the present program of therapy for ITP be? And what about the future of corticosteroid, more particularly prednisone, therapy?

Largely through the impetus already established *by Banti and Micheli for the use of splenectomy in* hemolytic anemia, this operation was introduced by Kaznelson [1] in 1916 for the treatment of ITP. For a long time (until about 1950) there was no other form of therapy, and splenectomy was (and still is) being performed in almost all cases of ITP, and even as an emergency procedure in acute cases of the disease.[7] Beginning with 1950, ACTH (and later cortisone) was introduced and found to be of considerable help in reducing the hemorrhagic tendency, probably by a nonspecific effect on blood vessel wall. Later, the transfusion of viable platelets by the use of fresh blood drawn into siliconized bottles or plastic bags proved of considerable value in conjunction with the corticosteroid in tiding the patient over the hemorrhagic crisis. One was still faced, however, with certain cases that failed to respond and with the chronic cases of thrombocytopenia subject to remission and relapse, but always having a low platelet level. In these cases, it was our routine until recently to recommend splenectomy. However, the growing indication that ITP was a "self-perpetuating" immunological disturbance, the often very transient effects of splenectomy in raising the platelet level, and the increasing realization that ITP and systemic lupus erythematosus were closely related led us to consider splenectomy only as a measure of last resort when other measures had failed.

According to the concepts of many present-day workers,[8] ITP may be considered as an "autoimmune" disorder, arising by some obscure antigenic stimulus and attacking the individual's own platelets. In the acute cases, it is conceivable that the antibody develops suddenly, attacks explosively, and often disappears; but in the chronic cases, the immunological mechanism is probably self-perpetuating, thus resulting in chronic thrombocytopenia. The waxing and waning of the thrombocytopenia in a typical chronic case might conceivably result in a temporary rise in platelets in a given case of ITP, but when antibody concentration becomes unusually high, a relapse could occur at a later date. In a previous article,[10] we have pointed to the development of disseminated lupus erythematosus after splenectomy in cases in which latent or "occult" lupus was previously present, and in which only hematological manifestations were present before splenectomy. It seemed possible that removal of the spleen had in some manner aided in dissemination of the lupus process. Since then, we have observed several similar cases, and this observation has been confirmed by others. Further studies indicate that approximately 25% of all patients with apparently typical ITP in whom the spleen is removed will eventually develop systemic lupus. It is apparent that ITP is often a prodrome of the more generalized disease and that the thrombocytopenia, like autoimmune hemolytic anemia or a positive serologic test for syphilis, is as much a manifestation of the disease lupus as the skin lesions or the L.E. test.[11] All of these various considerations, together with the actual end-results of splenectomy, have led us to conclude that ITP is fundamentally a "medical" disorder, in which splenectomy is to be avoided as long as possible, with chief emphasis on treatment by "medical" means, i. e., platelet transfusions and corticosteroids.

Initially we used corticosteroids to reduce the bleeding tendency and to prepare the patient for splenectomy. In the present study, the new steroid prednisone was used, not only to reduce bleeding through its nonspecific effect on blood vessels, but to raise the platelet count and thus perhaps avoid the necessity for splenectomy. Possible avoidance of a major operation is always desirable, especially if this can be done without jeopardizing the individual's life or well-being. On the other hand, there are certain disadvantages to this "medical" form of therapy: 1. The patient must be observed carefully, and some weeks and months are consumed in assaying the effect of prednisone on the platelet count and in adjusting the dose to its proper level. 2. Rounding of the face and other features of hyperadrenocorticism usually develop and may be the occasion for comment by the patient and family. 3. Continued steroid therapy may result in such complications as osteoporosis, hyperglycemia, and a tendency to infections. 4. The patient may conceivably have a cerebral or other important hemorrhage while waiting for the platelet count to rise.

As for the last complication, this did not occur in our present series, and it seems an unlikely event with the patient taking the large starting doses of steroid. The "juggling" of doses and the careful follow-up with frequent platelet counts are difficult except in the appropriate "setup," but they can be accomplished. The most careful studies are required during the first two weeks. The continued use of relatively large doses of steroid imposes many potential difficulties. Thus, the dose of prednisone was dropped to the lowest possible levels, e. g., 5 to 10 mg. per day as quickly as possible. In most individuals, this amount was sufficient to maintain the platelet level at normal or near normal values. If 15 mg. or 10 mg. can keep the platelet count at 500,000 per cubic millimeter level, 5 mg. or even 2.5 mg. may hold it at one-half normal values, and this is compatible with complete freedom from hemorrhagic manifestations. If an individual requires more than 10 mg. of prednisone per day to keep the platelet level reasonably good, then splenectomy is probably warranted after a period of observation of several months to one year, since the end-results of years of prednisone therapy are unpredictable. It can be stated, however, that many patients with autoimmune hemolytic anemia have tolerated the continued use of relatively small doses of cortisone or prednisone for two to five years without apparent complication.[9a]

It is thus our present intention to continue this nonsurgical method of therapy as long as practicable in order to obtain as full knowledge as we can regarding the value of prednisone and other corticosteroids. Similarly, when assaying the value of ACTH and the corticosteroids in the treatment of autoimmune hemolytic anemia[9a] in which splenectomy had previously been the sole therapeutic method, we performed no splenectomies during a period of three and one-half years. At the end of that time, of 43 cases under observation, a residue of 8 cases was present in which splenectomy seemed to be indicated because of continued hemolysis, poor control with steroid, or complications from steroid therapy. Thus it is our present plan to reserve splenectomy for those cases of ITP that have either failed completely to respond to prednisone or in which the large dosage of prednisone required to keep that patient's condition in remission precludes its continued use. At this time, no predictions can be made as to the ultimate value of prednisone as compared to splenectomy. Nevertheless, it can be stated that the uncertain value of splenectomy in ITP, its possible tendency to disseminate a previously latent lupus, together with the frequency of "spontaneous" remissions and relapses in this probably immunological disease, make it worthwhile to reevaluate conservative "medical" measures as a possible substitute for the more drastic therapeutic method of splenectomy.

Summary and Conclusions

Thirty consecutive cases of idiopathic thrombocytopenic purpura (ITP) were treated with prednisone during a 24-month period. While all cases were of the idiopathic variety, some were acute, some chronic, and some were in relapse after splenectomy. In several cases, previous therapy with ACTH and cortisone or splenectomy had been used, with poor results. The initial dose of prednisone varied between 20 and 150 mg. a day. When the platelet count reached normal levels the dose of prednisone was reduced to "maintenance" levels (2.5-15 mg. a day); this amount was continued for several months and if the platelet level remained normal, prednisone therapy was discontinued. Of the 30 patients, 22 obtained normal platelet counts sometime during the course of prednisone therapy. In the remaining eight, two attained nearly normal platelet levels and two showed a well-defined rise to one-third to one-half of normal values. Four showed little or no rise in platelet levels.

In several patients, thrombocytopenia to a greater or lesser degree returned when prednisone was withdrawn or dosage reduced to low levels. In most instances, however, a second course of prednisone brought about a second remission. It has been possible to discontinue prednisone therapy in 8 of the 22 patients without a drop in their platelet levels, even though a few of these 8 had required a second course of prednisone. Splenectomy was performed in five patients in this series and in only one instance was this followed by a complete and sustained remission. In two patients who had received massive doses of steroids without rise in platelets, splenectomy was followed by a rise in the platelet count to normal, but a gradual drop in the platelet count occurred later in both. In the remaining two cases, splenectomy was followed by prompt relapse in platelet counts, in one case to very low levels. In this patient, another course of prednisone therapy postoperatively resulted in a complete remission. None of the usually mentioned serious complications of corticosteroid therapy were encountered during the 24-month period, although therapy was discontinued in two cases at the patients' requests, one because of mild mood disturbance and the other because she did not like her rounded face.

Prednisone, if given in sufficient dosage, is capable of inducing a normal platelet count in most cases of idiopathic thrombocytopenic purpura, whether acute, chronic, or in relapse after previous splenectomy. Prednisone seems to be more effective in inducing remissions in platelets to normal values than either ACTH or cortisone. The remissions, once established, can usually be maintained by the administration of small doses of the drug (2.5-5 mg. daily). It has become apparent that it is not completely essential to maintain the platelet level at exact normality; complete freedom from all bleeding manifestations can be achieved with the platelet level at one-third to one-half normal values. This is an important consideration with respect to the use of small doses of prednisone for long-continued therapy. Patients failing to respond to prednisone therapy can undergo splenectomy. The results of splenectomy in ITP, with or without previous prednisone therapy, are always uncertain. It is probable that the relapse rate is at least as great with splenectomy as with prednisone.

In acute and fulminating ITP, the best therapy is prednisone in sufficient dosage, together with fresh blood from plastic bags. Not only may splenectomy be hazardous under such conditions, but a complete remission usually develops with prednisone alone, often persisting indefinitely without further treatment. It has become necessary to re-evaluate splenectomy as a therapeutic measure in ITP. This comes with realization that the disease is subject to long remissions and relapses and that, once having developed, it is often a more or less permanent disturbance. This does not say that permanency necessarily means disability, since many individuals with a slight or even marked reduction in platelets are otherwise quite healthy. Furthermore, the growing realization that ITP is often a prodrome of systemic lupus erythematosus, and that splenectomy may be a factor in the dissemination of occult or latent lupus, has proved another deterrent to our quick use of the operation.

In the treatment of ITP, chief reliance should be placed upon "medical" measures including the use of prednisone and fresh, "plastic bag" transfusions. Splenectomy should be reserved for those severe cases which fail to respond to such measures. In the present day enthusiasm for laboratory tests, too much emphasis has been placed on obtaining complete normality of the platelet count. It is quite evident that patients with ITP can be maintained in full normal activity and without danger of hemorrhage at platelet levels of one-third to one-half of normal. These levels can often be attained by the use of small maintenance doses of prednisone.

Addendum

Since completion of this report, a 60-year-old woman with chronic ITP has not responded to prednisone and has developed marked osteoporosis and partial compression fractures of three vertebrae in four months of prednisone therapy. Recently, two patients with chronic ITP were treated with a new synthetic corticosteroid, triamcinolone (Aristocort). A prompt and striking response in platelet count took place in both cases.

205 Beacon St. (16) (Dr. Dameshek).

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PROGNOSIS IN ARTERIOSCLEROTIC PERIPHERAL VASCULAR DISEASE

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Observations of the course of peripheral vascular disease were made in 1,198 patients who satisfied certain criteria as to signs and symptoms. The patients with coexistent diabetes were found to have a 10-year mortality rate of about 38% compared to 11% for nondiabetic patients. Diabetic patients also had a much higher rate of amputations (34%) than did nondiabetics (8%). Severe hypertension was also associated with some shortening of life expectancy, but its relation to frequency of amputation was complex. The amputation rate was lower in patients who had stopped smoking than in patients who continued to smoke or had never smoked. When acute occlusion of the femoral artery occurred, the prognosis was again much better in the nondiabetic than in the diabetic patients. In a group of 39 patients who underwent sympathectomy no favorable effect on the amputation rate was seen. Peripheral vascular disease in the presence of diabetes calls for rather aggressive measures. In the absence of diabetes, symptoms like intermittent claudication often persist for many years without worsening or even with some alleviation; the condition seems relatively benign, and conservative (nonsurgical) treatment is fairly satisfactory.

The purpose of this study was to determine the prognosis for life and limb in patients with arteriosclerotic peripheral vascular disease and to evaluate certain factors, such as presence of diabetes, use of tobacco, association of hypertension, decade of onset of symptoms, and sex, on prognosis. The cases employed for this investigation were carefully selected from records from the private practice of one of us (S. S.). For this survey, all patients who presented evidence of preceding thrombosis of the coronary or cerebral vessels were excluded, because these conditions in themselves affect prognosis. All patients with uncomplicated arteriosclerotic peripheral vascular disease who had been followed for three years or more after the onset of symptoms and, in addition, all patients who were followed to the time of death or amputation were included. From the large number of records available it was possible to select 1,198 suitable cases of patients seen in the past 15 years. These patients included 942 men and 256 women; there were 958 living and 240 dead; 399 were diabetic and 799 nondiabetic; 353 were hypertensive and 775 normotensive; and 851 were smokers and 214 nonsmokers.

For the purpose of this study the onset of symptoms was regarded as the time of the beginning of the disease, although it is obvious that some degree of vascular disease was certainly present for some time prior to the first symptom. The degree of vascular impairment is shown in table 1. Most of these patients were referred by their personal physicians for opinion, evaluation, and suggestions in regard to treatment. The progress of most of the patients was followed by repeated personal examinations, but, in many, follow-up data was obtained by correspondence with the patient or the referring physician. The symptoms which were regarded as significant of peripheral vascular disease were intermittent claudication, ulceration, or gangrene of the feet.

TABLE 1.—*Degree of Vascular Involvement in 1,198 Patients*

Involvement		Patients, No.
Degree	Extent	
5	External iliac, femoral, popliteal, and all foot pulses absent	21
4	Femoral, popliteal, anterior tibial and posterior tibial arteries closed	74
3	Femoral open, popliteal, anterior tibial and posterior tibial arteries closed	584
2	Femoral and popliteal arteries open, anterior tibial and posterior tibial arteries closed	235
1	Femoral, popliteal, and one foot pulse open, one foot pulse closed	201
0	All pulses present, but reduced in size	83

Duration of Life and Cause of Death

Compared with normal persons,[1] patients with arteriosclerotic peripheral vascular disease not complicated by diabetes or severe hypertension showed no shortening of life expectancy (table 2 and fig. 1). Males and females showed no striking difference in this respect. The most striking fact revealed by this study is that patients with diabetes have a much graver prognosis than those free from this disease. For example, the 10-year mortality rate for diabetic patients is about 38%, compared to 11% for nondiabetic patients (table 4). When the patients are divided into groups based on age at onset of the peripheral vascular disease, the life expectancy for the older age group is found to be less than that for the younger groups, as would be expected. In all age groups, the survival curves for nondiabetic patients approximate the normal. Also in all age groups, the survival curves for diabetic patients show markedly diminished life expectancy. This is most pronounced in the younger groups (fig. 1). The known cause of death in the majority of cases was either coronary thrombosis (42%) or cerebral thrombosis (12%). The presence of moderate hypertension (blood pressure below 200/110 mm. Hg) made no alteration in mortality figures. Severe hypertension (blood pressure over 200/110 mm. Hg) caused some shortening of life expectancy (table 3 and fig. 2). For those patients accustomed to smoke who stopped smoking, the mortality rate is about one-half that for patients who continued to smoke (fig. 3). Nonsmokers, however, showed a mortality rate as high as that of smokers. Apparently, in this group other factors, possibly hereditary, are more important.

Table 2.—*Comparative Mortality Rates for Nondiabetic and Diabetic Patients with Arteriosclerotic Peripheral Vascular Disease By Years of Follow-up Per Total Patients in Study*

	Nondiabetic						Diabetic					
	Male			Female			Male			Female		
		Died			Died			Died			Died	
Period of Follow-up, Yr.	Total	No.	%	Total	No.	%	Total	No.	%	Total	No.	%
3	681	9	1.3	118	2	1.7	261	12	4.8	138	4	2.9
5	627	18	2.9	106	4	3.8	232	28	12.1	119	8	6.7
10	491	57	11.6	83	9	10.8	185	68	36.8	90	36	40
15	233	75	32.2	30	13	43.4	133	85	63.8	55	44	80
20	112	79	64.7	18	13	72.2	109	96	88.1	48	44	91.6
30	94	83	88.2	14	13	92.9	101	99	98	46	45	97.8

(8%), while in 399 diabetic patients there were 137 amputations (34%). The amputation rate in female patients is appreciably higher than that in male patients.

Table 3.—*Effect of Hypertension on Survival Rates* for Patients With and Without Diabetes*

		Nondiabetic Patients			Diabetic Patients		
			Died			Died	
Blood Pressure	Period of Follow-up, Yr.	Living, No.	No.	%	Living, No.	No.	%
Normal	3	506	7	1	148	8	5
	5	463	15	3	126	17	12
	10	351	46	11	80	52	39
	15	121	60	33	25	69	73
	20	33	66	66	7	79	92
Under 200/110 mm. Hg.	3	98	2	2	52	6	10
	5	86	3	3	37	10	21
	10	60	7	10	29	23	44
	15	19	10	34	10	27	73
	20	5	10	66	2	30	94
Over 200/110 mm. Hg.	3	78	2	2	33	2	6
	5	71	4	5	28	7	20
	10	55	13	18	13	20	60
	15	22	17	44	4	22	85
	20	7	19	73	1	22	96

* Combined rates for men and women.

The observation that only 8% of 800 nondiabetic patients who were treated by nonsurgical methods required amputation is particularly valuable. This serves as a control group for comparison with patients treated by sympathectomy or arterial grafts. It indicates that nonsurgical treatment is fairly satisfactory for preservation of extremities in this group. It is unlikely that the results of surgical treatment can show an impressive improvement over these figures. In the diabetic patient, on the other hand, the results of medical treatment are obviously poor. A total of 34% of these patients suffered amputations of one or both legs. It is in

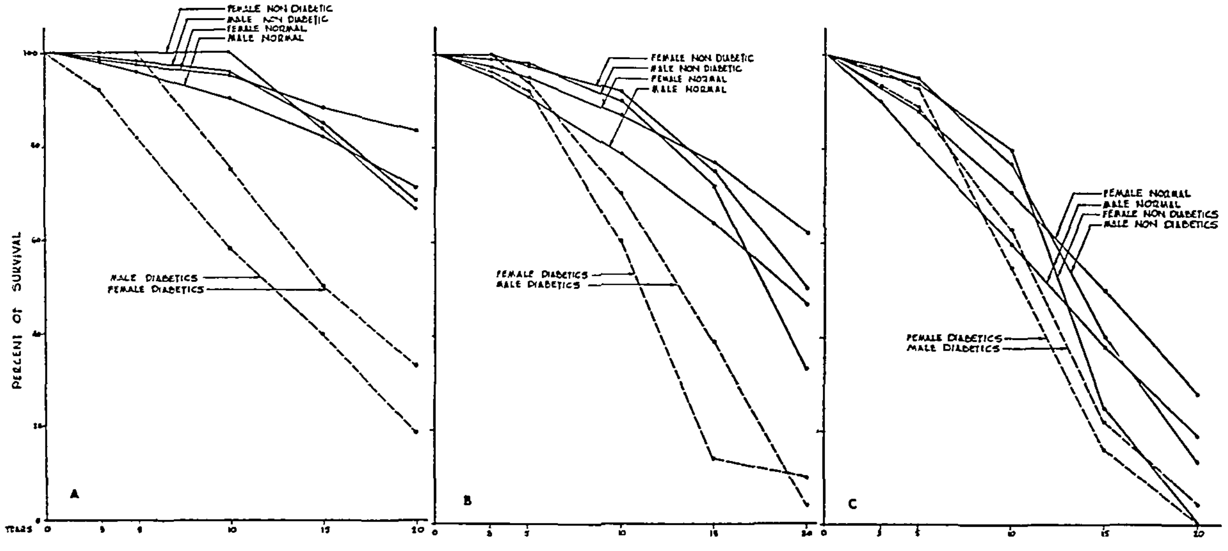

Fig. 1.—Survival curves for patients with arteriosclerotic vascular disease with and without diabetes. *A*, age group 40-50; *B*, age group 50-60; C, age group 60-70.

Necessity for Amputation

As in the statistics for life expectancy, the most striking observation resulting from this study was the graver prognosis for diabetic compared with nondiabetic patients (table 4). Thus, in 799 nondiabetic patients there were only 64 amputations this group that more aggressive treatment is needed. Comparative, carefully documented results in a group of diabetic patients treated by sympathectomy and/or arterial grafts will be awaited with interest. Up to now, no such report has come to our attention.

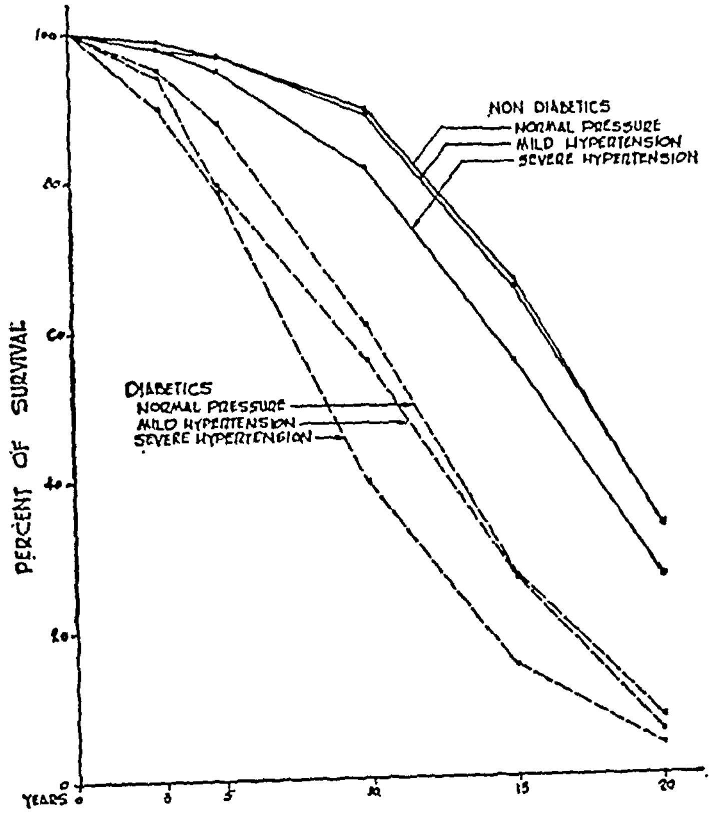

Fig. 2.—Effect of hypertension on mortality rates for patients with arteriosclerotic vascular disease with and without diabetes.

In patients with severe impairment of circulation in the legs, the gradual development of hypertension is sometimes associated with progressive improvement in circulation. On the other hand, when hypertensive patients suffer a sharp decline of blood pressure due to a coronary thrombosis, the impairment of circulation in the legs may be aggravated and occasionally gangrene develops. However, there is no clear evidence that hypertension protects patients from amputation (table 5).

TABLE 4.—*Amputations in Patients With and Without Diabetes*

	Total Patients, No.		Single Amputations				Double Amputations			
			Nondiabetic		Diabetic		Nondiabetic		Diabetic	
	Nondiabetic	Diabetic	No.	%*	No.	%†	No.	%*	No.	%†
Male	681	261	50	7	76	29	1	0.1	12	5
Female	118	138	14	11	61	44	2	2.0	12	9
Total	799	399	64	8	137	34	3	0.4	24	6

* Per cent of nondiabetic patients.
† Per cent of diabetic patients.

The continued use of tobacco results in a higher rate of amputations than when tobacco smoking is stopped (table 6). This is more clearly seen in the nondiabetic patients, in whom the amputation rate is 5% in former smokers and 10% in those who continued to smoke. In the diabetic patients, the overshadowing effect of this disease seems to obscure the harmful effects of smoking. However, in those patients who have never smoked the amputation rate is as high as in those who continued to smoke. In this group it appears that other factors, such as heredity and diet, play a more important role.

TABLE 5.—*Effect of Hypertension and Sex on Amputations*

	Nondiabetic Patients			Diabetic Patients		
	Male	Female	Total	Male	Female	Total
Blood pressure normal						
Cases, no.	524	42	566	178	51	[illegible]
Amp., no.	28	5	33	47	24	[illegible]
Amp., %	5	12	6	26	47	31
Moderate hypertension						
Cases, no.	81	33	117	44	38	[illegible]
Amp., no.	10	4	14	13	12	[illegible]
Amp., %	12	12	12	30	32	[illegible]
Severe hypertension						
Cases, no.	56	44	100	14	40	54
Amp., no.	2	4	6	4	18	[illegible]
Amp., %	4	10	6	29	45	41
Blood pressure not recorded	...	...	11	...	...	19
Total amputations			64			13

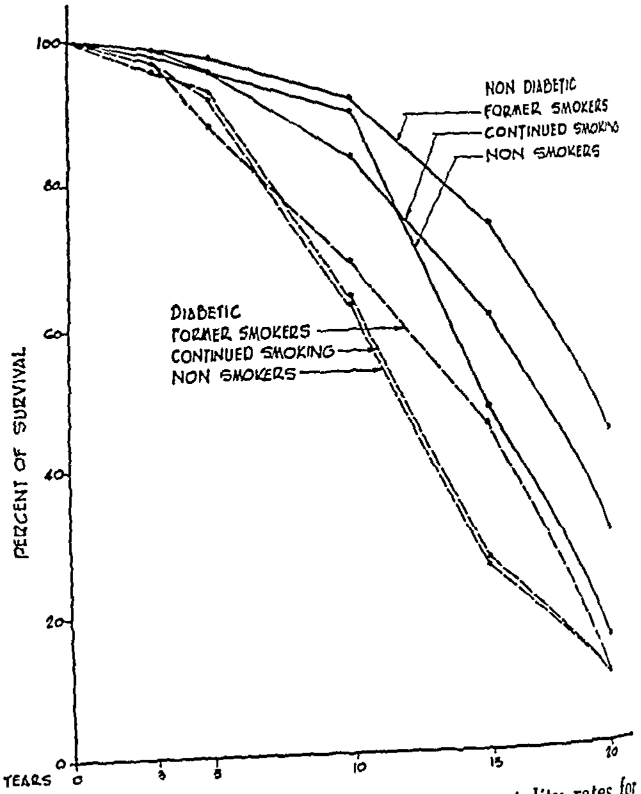

Fig. 3.—Effect of tobacco smoking on mortality rates for patients with arteriosclerotic vascular disease with and without diabetes.

Our studies indicate that the percentage of amputations in patients with iliac artery occlusion is higher than in those with less extensive disease (table 7). The graver outlook for patients with diabetes in this group is apparent. For example, in 69 nondiabetic patients there were 11 amputations

(16%), while in 26 diabetic patients there were 12 amputations (46%). Severe impairment occurred in 95 cases with 23 amputations (24%). Less severe impairment occurred in 1,103 cases with 178 amputations (16%). Amputations are thus more frequently required in more advanced cases.

Table 6.—*Effect of Smoking on Amputations*

	Nondiabetic Patients			Diabetic Patients		
	Male	Female	Total	Male	Female	Total
Nonsmokers						
Cases, no.	37	53	90	30	93	124
Amp., no.	3	9	12	11	37	48
Amp., %	8	17	10	37	39	39
Former smokers						
Cases, no.	355	32	387	105	12	117
Amp., no.	18	3	21	30	4	34
Amp., %	5	9	5	29	33	29
Continued smoking						
Cases, no.	231	21	252	87	8	95
Amp., no.	24	0	24	18	3	21
Amp., %	10	0	10	21	38	22
Not recorded	...	...	7	...	...	34
Total			64			137

Prognosis in the Acute Femoral Occlusion Syndrome

Sudden occlusion of a femoral artery occurs quite frequently in the course of peripheral vascular disease. At times, it may be the presenting complaint and the first indication to the patient of circulatory trouble. The diagnosis is easily made. Usually there is a history of sudden onset of severe pain in a lower extremity after walking a short distance and at times pain or numbness in the foot at rest. The patient will usually note that the foot is pale and cold. On examination, in addition to the pale, cold extremity there will be an absence of all arterial pulsations below the femoral. The oscillometric readings below the knee will be markedly reduced. In this series, there were 123 patients who were examined shortly after the acute closure and in whom the diagnosis was obvious at the time of examination. In addition, there were 144 patients in whom the acute closure had apparently taken place several months before. Although the extremity was no longer cold, the diagnosis could be made with reasonable certainty from the fairly typical history, the reduced oscillometric readings, and the absence of arterial pulses below the femoral.

The majority of acute femoral artery occlusions take place at the lower end of Hunter's canal where the artery passes through an opening in the adductor magnus muscle to enter the popliteal space. Twenty-five per cent of the patients in this series presented evidence of acute occlusion at this site. The other frequent location of acute closure is at the brim of the pelvis where the external iliac artery passes beneath Poupart's ligament to become the femoral artery. At these points, unusual strain or pressure is exerted in the femoral artery. The presence of disease in the intima would make the artery more susceptible to thrombosis at these locations.

It is noteworthy that major amputation was necessary in only 48 of the 267 patients who had acute femoral artery occlusions (18%). There were 185 nondiabetic patients with 22 amputations (12%) and 82 diabetic patients with 26 amputations (32%).

The graver prognosis for diabetic patients is again evident. In this group more aggressive treatment is obviously needed. Patients with acute femoral artery thrombosis are likely to show patent arteries below the level of occlusion, particularly if studied with arteriograms shortly after the acute episode. There is a reasonable possibility that prompt insertion of a graft or bypass could save many of these extremities.

In the nondiabetic patient, slow, gradual recovery is the usual rule in patients who develop this type of acute vascular accident. The severity of the intermittent claudication gradually diminishes and may disappear completely. The extremity usually becomes warm, oscillometric readings gradually improve, and pulsations occasionally reappear in the foot.

Value of Sympathectomy in Prevention of Amputations

In the present series of 1,198 cases, in only 39 had sympathectomy been done. This group is too small to be statistically valuable. In 22 nondiabetic patients there were four amputations (18%), while in 17 diabetic patients there were eight amputations (47%). This makes a total of 12 amputations (31%), as compared to 16% in the entire series of 1,198 cases. In this small group sympathectomy had no favorable effect on amputation rate.

It is of great importance to establish whether or not sympathectomy has any prophylactic value in preventing amputations. Up to now no reliable statistics on this point have been published. We have established that 30% of diabetic patients who have one leg amputated will lose the second leg within three years and 51% within five years.[2] This is a control group and may be compared to a group of diabetic patients in whom there is necessity for amputation of the second leg after prophylactic sympathectomy. It would be desirable for every

Table 7.—*Effect of Severity of Disease on Amputation Rate*

Severity		0	1	2	3	4	5	Total
Nondiabetics	Cases, no.	76	155	121	378	48	21	799
	Amp , no.	1	2	13	37	10	1	64
	Amp., %	1	1	10	10	20	5	8
Diabetics	Cases, no.	7	46	114	206	26	0	399
	Amp., no.	0	8	39	78	12	0	137
	Amp., %	0	17	34	38	46	0	34
Total	Cases, no.	83	201	235	584	74	21	1198
	Amp , no.	1	10	52	115	22	1	201
	Amp., %	1	5	22	20	30	5	17

diabetic patient who requires amputation of a leg to have a sympathectomy on the remaining leg and to be followed to determine if a second amputation was necessary. If the percentage of second amputations required after prophylactic sympathectomy was appreciably less than 30% in three years or 51% in five years, the value of this procedure would be objectively established. An even more critical evaluation would result if such a study was made on an alternate case series within the same hospital service.

Table 8.—*Effect of Diabetes and Use of Tobacco on Progress of Disease*

	Nondiabetic Patients (799 Total)					Diabetic Patients (399 Total)				
	Total	Non-smokers	Stopped Smoking	Continued Smoking	Not Recorded	Total	Non-smokers	Stopped Smoking	Continued Smoking	Not Recorded
Seen only once	42	0	4	36	2	41	17	15	6	3
Improved, no.	300	24	188	60	28	66	12	34	14	8
%		27	49	28			11	31	16	
Stationary, no.	196	25	91	60	20	68	15	24	20	9
%		28	24	28			14	22	22	
Worse, no.	261	41	101	96	20	224	84	53	56	31
%		45	27	44			75	47	62	
Total valid, no.	689	90	383	216		312	111	111	90	

Effect of Various Factors on Progress

Of the 1,198 patients, 83 were seen only once and the results of treatment in this group are undetermined. A total of 201 cases ended in amputation, and these are obvious failures. Of the remaining 914 patients, 366 improved, in 264 the disease remained stationary, and 284 became worse (table 8).

Patients were regarded as improved if they reported that the distance they could walk without pain was appreciably greater. We are aware that increased walking distance without pain serves only as a crude index of improved circulation. However, since the purpose of this study was to determine the effect of various factors on progress and since the same criteria were used for each group, it has some value as a means of comparison.

Patients with ulcerations or gangrene which healed completely were also regarded as improved. Those who showed objective evidence of increased blood flow by return of pulsations or increased oscillometric readings likewise were included in this group. A few patients reported no improvement in symptoms but there was clear objective evidence of better circulation. These also are included in the improved group.

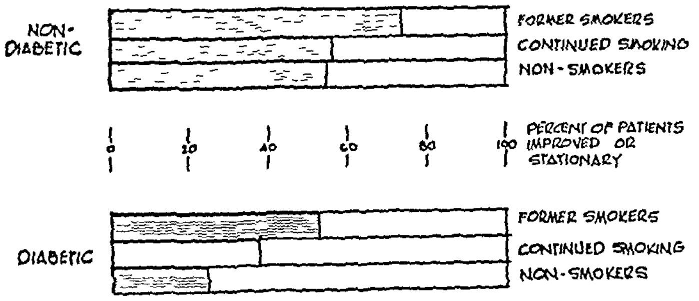

Fig. 4.—Influence of smoking on improvement of circulation for patients with and without diabetes.

It is important to stress that patients who are classified as having stationary disease may not be seriously disabled. The chief complaint in most patients with arteriosclerotic peripheral vascular disease is intermittent claudication. This is not a seriously disabling condition for most individuals, and it is rarely necessary for these patients to stop work or even change their occupation. They are usually completely comfortable at rest or while standing, and can walk variable distances without discomfort. Transportation facilities usually carry such individuals close to their places of employment or homes, and their limited ability to walk is no great handicap. The distance they can walk without pain may remain constant for many years. The improved and the stationary patients may be combined as the "favorable" group, in contrast to those who became worse.

Separation of these patients into those with and without diabetes again shows the graver prognosis in the diabetic patient. Of 757 nondiabetic patients, 496 improved or remained unchanged (66%); of 358 diabetic patients, 134 improved or remained unchanged (37%) (table 8).

The harmful effect of the use of tobacco on progress is apparent in table 8 and figure 4. The percentage of improved cases in those patients who stopped smoking is about double the figure for those who continued smoking. The percentage of improved cases is least in those patients who have never smoked and again indicates that other factors, possibly diet or hereditary disposition, are more important in this group.

Table 9.—*Effect of Hypertension on Progress of Disease in Male Nondiabetic Patients*

	Normal Blood pressure	Moderate Hypertension	Severe Hypertension
Improved, no.	220	27	17
%	43	35	34
Stationary, no.	130	19	9
%	25	24	18
Worse, no.	165	32	24
%	32	41	48
Total	515	78	50

The effect of hypertension on progress is shown in table 9. It is apparent that hypertension is a harmful complication. Unfavorable progress is noted in 32% of patients with normal blood pressure, 41% with moderate hypertension, and 48% with severe hypertension.

Summary

The life expectancy of patients with uncomplicated arteriosclerotic peripheral vascular disease is not shortened, compared with normal individuals. Eleven per cent of these patients die within 10 years and 33% within 15 years from onset of symptoms. The prognosis in the disease complicated by diabetes is much graver. In this study, 38% of the diabetic patients died in 10 years and 69% died in 15 years from the onset. Moderate hypertension has no influence on life expectancy, but severe hypertension has an unfavorable influence. The continued use of tobacco by smokers shortens life expectancy.

Amputations are infrequently necessary in patients with the disease who do not have diabetes. Diabetic patients require amputation four times as frequently as those without this disease. The amputation rate in females is appreciably higher than that in males. The continued use of tobacco increases the percentage of those who require amputation. The presence of hypertension does not affect amputation rate.

Acute femoral artery thrombosis is usually a relatively benign vascular accident in nondiabetic patients, and amputations are necessary in only 12%. In the patients with diabetes the amputation rate is 32%. On conservative management, 66% of nondiabetic patients improve or the disease becomes stationary. Of patients with diabetes, only 37% respond in a favorable manner.

In general, this study indicates that conservative (nonsurgical) management of patients with arteriosclerotic peripheral vascular disease is fairly satisfactory in the nondiabetic patient but that the results in the diabetic patient are poor. More aggressive measures are necessary in this group. It remains to be shown whether or not sympathectomy or vascular grafting procedures will improve the long-term results in this group.

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MEDICOLEGAL ASPECTS OF INTUBATION GRANULOMA

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Endotracheal intubation has sometimes been followed by laryngeal granuloma in spite of the best prophylactic measures. This occurrence does not necessarily reflect unfavorably upon the anesthesiologist. Two cases here cited show that some patients tolerate an endotracheal tube for days without evidence of trauma to the larynx while others after a brief period of intubation develop granulomatous lesions with persistent aphonia or dysphonia. These lesions, initially sessile, generally become pedunculated and are eventually ejected. The period of vocal disability is important to patients who use their voices occupationally. Recovery is not hastened by cauterizing the granulation tissue. The anesthesiologist can forestall litigation in some patients either by avoiding endotracheal intubation or by explaining to the patient in advance that granulomas do not mean negligence.

The fact that laryngeal granuloma may occasionally occur as a sequel to endotracheal intubation in no way invalidates the many advantages of this anesthetic technique.[1] On the contrary, the technique is being employed more widely than ever because of the protection it affords against aspiration, hypoxia, and laryngospasm.[2] Nevertheless, claims of negligence and resultant law suits are not uncommon, even when the patient has made a complete recovery from such a postintubation granuloma. The material herein is based on personal experience as a consultant and expert witness in such cases.

Etiology

Jackson[3] has demonstrated that the initial lesion in laryngeal granuloma is a contact ulcer caused by the endotracheal tube moving on the thin mucosal surface overlying the vocal processes of the true cords. In certain instances, trauma of this type is almost impossible to avoid in spite of the various present-day techniques with use of thiopental (Pentothal) sodium and succinylcholine (Anectine) chloride. This may occur at the time the tube is

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passed or during the anesthetization. Figure 1, taken from a previous report,[4] illustrates the difference between the position in the glottis of the tube during general anesthesia (*fig. 1, B*) and of the bronchoscope during local anesthesia (*fig. 1, A*). This serves to dramatize the difficulty in avoiding the pincer-like movements of the vocal processes on the tube and the resulting abrasion when the swallowing reflex is still partly present, as in most instances of thiopental anesthesia. The following case is an interesting clinical example, however, of a prolonged intubation without such damage.

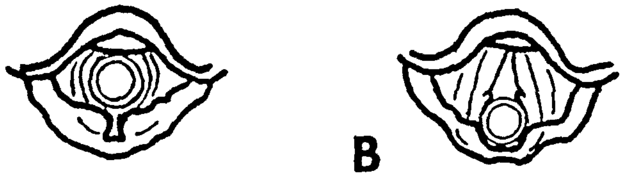

Fig. 1.—*A*, diagram showing bronchoscope in glottic chink during local anesthesia, as visualized from above. Tube can be seen against anterior commissure remote from vocal processes. *B*, diagram showing endotracheal tube in glottic chink, during general anesthesia, as visualized from above. Tube can be seen against *posterior commissure* pinched by *vocal processes*. (Reproduced with permission from *New England Journal of Medicine.*[4])

Case 1.—A 73-year-old male underwent a craniotomy on Dec. 22, 1947, which resulted in the loss of consciousness, a left hemiplegia, and a partial pharyngeal paralysis. An inoperable malignant tumor was found at surgery. Because the patient was "drowning in his own secretions" and suctioning appeared inadequate, an endotracheal tube was passed as a temporary expedient, inasmuch as the patient was not expected to live more than a few days. This intubation was performed without the use of anesthesia by Dr. Warren Greene at 11 a.m. on Dec. 23, 1947.

The patient tolerated the airway well, even though semicomatose. He made some feeble attempts at phonation and swallowing, and there were occasional movements of the head and neck. The conditions closely simulated those of an intubation with the patient under general anesthesia rather than a bronchoscopy with the patient under local anesthesia. At 4 a.m. on Jan. 2, 1948, the patient died.

This, so far as can be determined, is the longest such intubation in the medical literature. Yet at autopsy the larynx was free of evidence of trauma (fig. 2).

This case demonstrates that, under the ideal conditions of gentle introduction of the tube, a minimum of extralaryngeal movements of the neck, and the avoidance of the "laryngeal pincer," a patient may well tolerate endotracheal intubation for a long time. Unfortunately, these ideal conditions cannot always be achieved at the time of surgery.

Treatment

The prophylaxis of laryngeal granuloma is discussed more thoroughly in an earlier paper,[4] and the reader is referred to it for lack of space herein. The point is, however, that in spite of all measures of prophylaxis against laryngeal granuloma, the lesion may unavoidably occur even under the best of conditions, and this occurrence does not necessarily reflect unfavorably on the anesthesiologist.

One of the commonest causes of litigation in these instances is unwise management of the granuloma. Many patients with granuloma are subjected to repeated operations—direct laryngoscopy, suspension laryngoscopy, and even thyrotomy. As a consequence of having experienced much discomfort and expense, the patient feels he deserves some compensation.

Baron and Kohlmoos[5] have stated that removal is not required unless the granuloma interferes with respiration and phonation. This is undoubtedly more effective treatment than the repeated attempts at removal described by others.[6] Surgical removal is most likely to be successful when the lesion has reached the pedunculated stage, and attempts at removal during the sessile stage should be avoided, as recurrence is likely. However, as I have shown in a previous study,[4] the eventual outcome after a well-defined pedicle has developed is a self-amputation. Therefore, except where there is serious dyspnea, the treatment of choice is strict voice rest without surgery; the polyp will eventually be ejected. The following is an illustrative case.

Case 2.—A 51-year-old female underwent a radical mastectomy in February, 1953, under endotracheal anesthesia. She noticed a loss of voice immediately upon recovery of consciousness. Her surgeon ordered steam inhalations and antibiotics, but this treatment was without benefit. The anesthesiologist never saw the patient after the surgery, and one month after the operation a laryngologist was called in consultation because of the persistent aphonia. During the next year the patient underwent laryngoscopy and removal of laryngeal granulomas on three occasions and finally a thyrotomy. All procedures failed. Cortisone therapy was tried, as well as cauterization of the granulation tissue. The granuloma flourished instead.

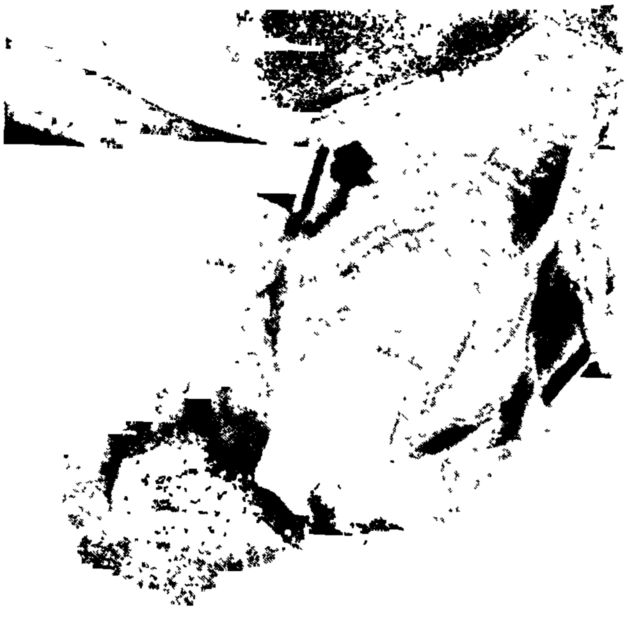

Fig. 2.—Larynx removed at autopsy after endotracheal tube was in place for 8 days and 17 hours. Note lack of macroscopic injury.

The patient was first seen by me on March 23, 1954, and found to have a 1-cm. spherical mass of granulations on both vocal processes. The patient was forbidden to speak or whisper but permitted only to use a pad and pencil. An antitussive was prescribed. On May 10, 1954, the sessile masses were seen to have developed a definite pedicle bilaterally. On July 26, 1954, the left cordal mass was gone and the cord appeared normal. The voice had improved too. On Nov. 18, 1954, the cords were both clear. The patient remembered coughing up a "small raspberry-like mass," and her voice was again normal. There has been no recurrence.

Nevertheless, the patient sued the anesthesiologist, contending he neglected her by not seeing her postoperatively despite the fact that he admitted difficulty in intubating her at the time of surgery. I was unable to dissuade her from the legal action, inasmuch as she felt that "Dr. .... should pay for all the hospital days and surgical discomfort he caused me." The anesthesiologist won the case.

The anesthetist can protect himself against lawsuit by close postoperative follow-up. Hoarseness, dysphonia, or persistent sore throat should be a signal to the anesthesiologist to obtain the consultation of a laryngologist immediately. A not uncommon complaint brought against the physician-anesthetist is that he failed to see the plaintiff postoperatively and thereby neglected the patient, as described in case 2.

It is admittedly difficult for the anesthesiologist to follow the patient's condition after surgery in many instances. For example, the patient may be discharged by the surgeon from the hospital the following day, before the busy anesthetist can see him. Furthermore, the granulomas may take one or two weeks to develop, and the patient by this time may be out of the anesthetist's reach. However, as Roman[7] has stated, "the responsibility of the anesthesiologist does not terminate when the anesthetic mask is removed from the patient's face or when the needle is withdrawn from a vein or the intrathecal space. . . . It seems obvious that the responsibility of the physician administering these drugs should not end until the actions of the drugs are terminated and until the complications that may arise from such administration have been obviated or properly treated."

Before the surgery, the anesthetist should note whether the patient is a singer or uses his voice professionally and whether the patient has had previous laryngeal surgery, and he should be prepared for those patients in whom intubation might be difficult. The following case is an example of such "lawsuit prophylaxis."

Case 3.—A 60-year-old male popular singer had a singer's node removed by me while he was under thiopental-succinylcholine anesthesia. He made an excellent recovery but sued his radio employers, claiming they had forced him to overwork his voice and that the overwork produced the singer's node. The man was obviously litigation-minded. A number of years later the patient entered the hospital for abdominal surgery and demanded "Pentothal anesthesia." The anesthesiologist felt that an endotracheal tube would be necessary with this anesthetic technique during abdominal surgery and was wisely reluctant to pass an endotracheal tube in view of the history of laryngeal surgery. It was therefore the advice of all of us concerned that a spinal anesthetic be given. Any real or imagined injury to this singer's vocal cords was thereby avoided, as well as a possible lawsuit.

Summary

Most, if not all, the litigation over laryngeal granulomas due to intubation could be avoided if the following policies were adopted. First, the anesthesiologist should see the patient preoperatively and postoperatively—preoperatively to appraise the patient and postoperatively to discuss the complications if present. Second, if the anesthetist is no longer following the case, the surgeon should watch for laryngeal granuloma and seek consultation. Third, the laryngologist can aid by judicious treatment and by explaining to the patient that granulomas do not mean negligence.

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THE PARENTS OF SCHIZOPHRENIC PATIENTS.—One rapidly realizes that these parents are struggling with their own problems and defenses and, with very rare exceptions, have striven to do their best for their children within their abilities and the limits placed by their own emotional difficulties. Too often the psychiatrist forgets his psychiatric understandings when dealing with parents and expects them to have been able to be different from what they were, or to change through reading a book or just because he tells them to behave differently. They, too, are as much bound to their unconscious conflicts as the patients and could not have been other than they were.—T. Lidz, A. R. Cornelison, S. Fleck, and D. Terry, The Father, *Psychiatry*, November, 1957.

Summary

The records of 41 patients having a total of 54 procedures for adrenalectomy at the University of Texas M. D. Anderson Hospital and Tumor Institute between October, 1954, and January, 1957, were reviewed. Endotracheal administration of nitrous oxide, oxygen, and ether and the use of thiopental (Pentothal) sodium, tubocurarine, and assisted respiration constituted the procedure in 52 of these procedures. Although four hypotensive episodes occurred, there were no operative or anesthetic deaths. Management of preoperative and postoperative steroid replacement therapy by a staff internist, as well as adequate preoperative and postoperative preparation and evaluation of the patients, contributed materially to the safety of the procedure.

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RADIATION HAZARDS OF INTRAVENOUS PYELOGRAPHY

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In an investigation of the possibility of gonadal injury by x-rays, a preliminary study was made of the records of 200 consecutive patients who had undergone intravenous pyelography. The evidence, in retrospect, showed that about 75% of the pyelograms had been justified, and that close adherence to indications could have eliminated about one-fourth. Measurements were made to determine the amount of radiation received by testes or ovaries during intravenous pyelography. In adults, the dose received was generally less than one roentgen for the ovaries and more, up to several roentgens, for the testes. A critical study of the information gained from 4,000 intravenous pyelograms, with films exposed at 5, 10, and 15 minutes after injection of the opaque medium, showed that the first two exposures might well be limited to the renal area since not one instance was found in which they gave information vital to the diagnosis of lower ureteral disease. A piece of lead or lead rubber should be used to cover the testes in the male patient and to shield the lower half of the abdomen in the female patient against undesired radiation, and actual exposure should be reduced to the minimum by strictly observing the indications and relying on the 15-minute or subsequent films for information as to the ureters.

Recent work has indicated the possibility that young patients (children and young adults) are receiving radiation to their gonadal regions, during the course of diagnostic x-ray studies, that may have undesirable effects manifest in future offspring. Of all the common x-ray examinations, intravenous pyelography is, perhaps, one of the most dangerous from the point of view of gonadal injury. With this in mind, intravenous pyelography was selected as the basis of a study to be approached from the following aspects: (1) the establishment of stricter criteria as indications for this procedure, (2) the determination of the gonadal dosage received during pyelography, and (3) a consideration of the practicality of providing physical protection to the gonadal areas.

The first part of our study consisted of a review of the records of 200 consecutive hospital and clinic patients who had undergone intravenous pyelography in the radiology department of the Albany Hospital from Oct. 20, 1955, to Feb. 2, 1956. There were several private outpatients examined during this period whom we have not included because their complete records were not available to us. We deliberately did not include current cases but instead went a year back into our records in order to avoid the tendency to "over-read" films in those individuals who had certain signs or symptoms that we had come to regard as significant. We reviewed the hospital records in an attempt to obtain the following information: reason

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for requesting the pyelogram; presence of symptoms suggesting disease of the urinary tract (hematuria, dysuria, frequency, and colicky pain), history of previous disease of the urinary tract; physical signs suggesting ureteral, renal, or bladder disease; abnormal findings on urinalysis; results of kidney function tests; and interpretation of the pyelogram. Our original hope had been to find some absolute correlation of one or more positive symptoms, signs, or laboratory tests with the finding of abnormality on the pyelogram. This was not an attempt to evaluate the accuracy of the latter as a diagnostic study. Unfortunately, we were unsuccessful in finding absolute correlation, although we did ascertain that the presence of certain historical, physical, or laboratory findings indicated the likelihood of an abnormal pyelogram.

Of 200 pyelograms, 55 were interpreted by the radiologist as demonstrating pathology. The history of characteristic colicky pain was the most accurate single finding indicating abnormality, almost invariably a calculus, in three out of five patients. Three of the six patients in whom the examiner palpated a possible renal mass were found to have enlarged kidneys. When gross or microscopic hematuria was present, pathology was demonstrated on two out of every five pyelograms. When urinalysis indicated the presence of white blood cells, one patient out of every four was found to have an abnormal pyelogram. When costovertebral-angle tenderness was present clinically, one out of every five patients had pathology demonstrated on the intravenous studies. Combination of symptoms, physical findings, and positive laboratory tests led to some increase in the accuracy of the predictions. If a person had costovertebral-angle tenderness and hematuria, he had one chance in two of having an abnormal pyelogram. If he had colicky pain and gross or microscopic hematuria, the chances were two out of three.

It became apparent as we analyzed the study that we could not accurately predict the presence of pathology by a simple analysis of signs, symptoms, and laboratory findings. Therefore, we found it necessary not only to include the above, but also to take into account certain recognized diseases which are often accompanied by a significantly high percentage of renal abnormality. Our list of indications is actually a modification of several lists that have appeared in the literature and in various textbooks.

Indications for Pyelography

This list of indications is as follows: 1. Typical history of renal or ureteral colic. This is a severe pain starting in either costovertebral region and radiating eventually anteriorly and often into the groin. 2. Mass in the kidney region. 3. Hematuria, gross or microscopic. In a woman, this must be on the basis of a catheterized specimen. 4. Carcinoma of the cervix (preliminary to treatment usually). In these patients, there is no need to worry about future genetic damage in view of the patient's age and the imminent surgical or radiation sterilization. 5. Hypertension. This is a somewhat misused indication. It is our impression that a large number of unnecessary pyelograms are being done when a plain film of the abdomen, studies with phentolamine (Regitine) methanesulfonate, and use of aforementioned criteria would often suffice. 6. Accidental or surgical trauma to the urinary tract. 7. History of renal or ureteral disease in the presence of recurrent symptoms. 8. Possible congenital neurogenic bladder. 9. Adrenal tumor. 10. Postoperative urinary tract procedure in the presence of recurrent symptoms.

Routine use of this list of indications is unfortunately unwieldy, but, in reviewing our cases, we find that about 75% of our pyelograms were clinically justified. On the basis of this list of indications, 51 of the 55 abnormal pyelograms were included. Of the four patients with abnormal studies not included, two were patients with asymptomatic renal calculi, one was a patient with an ectopic kidney which did not seem to be causing the patient's symptoms, and one was an individual with nonfunction of one kidney which our urologists felt was secondary to a recently passed ureteral calculus. We believe, therefore, that by adhering closely to these indications, we could eliminate one-fourth of our pyelograms while missing little of significance.

Measurement of Dose to Gonads

Any attempt to measure the quantity of radiation received by the gonadal tissues during intravenous pyelography is fraught with inaccuracies. It is well known that the output of diagnostic x-ray apparatus varies considerably due to many factors such as varying line voltages, tube-cathode temperatures, and exposure times. Nevertheless, since a review of recent literature revealed only a few reports of the radiation dose incidentally administered to the gonads during pyelography, we decided to measure this. The dose in the male was determined by placing a thimble chamber in contact with the scrotum. We believe that Stanford and Vance[1] were correct when they assumed that the value obtained represented the maximum dose to the reproductive organs. Although we have no studies to prove it, the air dose is thought to be about equivalent to the depth dose at 1 cm., which certainly would include the more superficial portion of the testis. The quality of the radiation that we used was "soft" (65-100 kvp range), but we feel that the beam was "hardened" by use of a 3-mm. Al filter and that the scatter was increased by the large volume of tissues through which the radiation was distributed. Our doses to the testes ranged from 0.1 r to 4 r. The doses in the lower range were thought to be due largely to the effects of scatter, while the doses in the range of 2 r to 4 r were higher, probably because the primary beam encompassed the scrotal region.

In the female it is more difficult to estimate the number of roentgens received by the germinal tissues. Unless one can use the direct method in which a measuring device is placed in the vagina and, therefore, lies in close approximation to the ovaries, one must use depth-dose tables. We chose the latter method and placed the thimble chamber on the anterior abdominal wall over the pelvic region. We assumed, as have other workers, that the ovaries lie at a point midway in the pelvis. Our air-dose measurements ranged from 0.7 r to 4.1 r. Using the depth-dose tables for diagnostic x-ray apparatus compiled by Ritter, Warren, and Pendergrass [2] and making the necessary corrections for differences in equipment and filtration, we estimated the ovarian doses to lie in the range of 0.2 r to 0.5 r.

It was our experience that the testes practically always received a larger quantity of radiation than did the ovaries, presumably because of their more superficial location. When the primary beam is not well collimated or when the central ray is more caudad than usual, due to positioning, the male germinal tissues will receive considerably more radiation. Because of the large number of variable factors present, we do not consider our measurements to be entirely accurate. It might be better to state that during intravenous pyelography in adults, the ovaries appear to receive doses that are generally less than one roentgen, while the testes may, and often do, receive several roentgens.

Method of Decreasing Gonadal Radiation

The third portion of our project was a study of the possible methods of decreasing gonadal doses. For many years, workers have advocated employing various procedures and devices to decrease the amount of radiation to which the patient is exposed during routine x-ray examinations. Certain of these suggestions, such as the use of a filter of aluminum, usually from 1 to 3 mm. in thickness, and the use of cones or diaphragms to collimate the beam, have been widely employed. However, the proposal that the gonads of children or young adults be shielded during x-ray examinations, although suggested by many workers, has not been widely employed in the x-ray departments of our city or, to our knowledge, in the departments of other cities.

Protection of the germinal tissue of the male during pyelography is a simple matter, as the testes can be covered with a thin piece of lead or lead rubber without interference with the visualization of the lower ureter or bladder. It is obvious in the female that any attempt to protect the ovaries would result in obscuration of the pelvic portions of the ureters and of the bladder. We therefore decided to review our cases of ureteral pathology as diagnosed on intravenous pyelography to determine if there was any correlation between the demonstration of pathology and the time sequence of the x-rays after the injection of the contrast medium.

In the past five years, we have performed over 4,000 intravenous pyelograms in our department. Our routine calls for films exposed at 5, 10, and 15 minutes after injection of the opaque medium. These films are inspected "wet," and additional "delayed" exposures are made if it is felt by the examiner that valuable information will be thereby obtained. A review of the department cross-index for the past five years revealed 87 cases of ureteral abnormality or pathology detected on the intravenous pyelogram. We found that most of the ureteral pathology was demonstrated on "delayed" films, which were made because of unilateral retarded excretion or because of unilateral hydronephrosis. A significant finding, however, was that in only 3 of the 87 cases could the pathology be demonstrated on the 5-or-10-minute films but not on the 15-minute or subsequent films. Interestingly, these three were all examples of double ureters. Two of them involved the abdominal portion of the ureter, so that they would have been visualized despite the covering of the pelvic portions of the ureters by a lead shield. The third was a case of double ureter on the right which was diagnosed by demonstration of the pelvic courses of both ureters on the 10-minute film only. In none of these three cases could it be said that the presence of the double ureter was the cause of the patient's symptoms. Therefore, in our series, in no instance was the 5-minute or 10-minute film vital to the diagnosis of significant lower ureteral disease. Because of this finding, we feel that during the "early" films we are justified in protecting the ovarian regions with a lead shield, the upper edge of which is at the level of the iliac crests. We realize that we will "hide" many normal ureters, but we feel that for the reasons stated the pathological ureter will fill on the 15-minute or delayed film.

Summary

A review of the records of 200 patients who had undergone intravenous pyelography revealed that about one out of every four pyelograms was unnecessary and could have been avoided if the clinicians had observed more carefully certain indications. During intravenous pyelography in adults, our studies indicate that the ovaries probably receive doses that are less than one roentgen, while the testes often receive several roentgens. The amount of radiation to the gonadal regions can be appreciably decreased without interfering with the diagnostic accuracy of the examination. A piece of lead or lead rubber is used to cover the testes in the male patient and the same is employed to cover the lower half of the abdomen in the female patient.

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METHODS IN EVALUATING ETHOHEPTAZINE AND ETHOHEPTAZINE COMBINED WITH ASPIRIN

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The efficiency of ethoheptazine as an analgesic was investigated in two series of observations. The first series, involving 71 patients with arthritis and other painful conditions, was set up to compare the effects of lactose as a placebo), aspirin, aspirin plus codeine, aspirin plus ethoheptazine, and ethoheptazine alone. The drugs were administered in capsules with certain precautions that prevented both the patient and those who appraised his responses from knowing which of the five kinds of capsules he was receiving. The results showed that aspirin and ethoheptazine were potent analgesics when given singly, and that when they were given together their combined effect was greater than that of either alone. Ethoheptazine 100 mg. alone was more efficient than aspirin 600 mg. alone. The second series, involving 35 patients, was set up to compare the effects of lactose (as placebo), aspirin plus ethoheptazine, and aspirin plus codeine. The results showed that the two mixtures were about equally good and that both were better than the placebo. Ethoheptazine in the dosage used caused less side-effects than did the placebo. This study illustrates two comparative statistical methods.

The general pharmacological properties and analgesic potency of ethoheptazine (Wy-401), 1-methyl-4-carbethoxy-4-phenylhexamethylenimine, in animals have been reported.[1] The clinical effectiveness and safety of this and other members of the hexamethylenimine series of analgesic compounds have been reported by Grossman and others and Golbey and others.[2] These studies indicate that ethoheptazine is an active analgesic which does not cause sedation, disorientation, constipation, suppression of cough reflex, or change in pupil size and that it does not have addiction liability.[3]

The primary objective of this study was to determine the relative clinical effectiveness of ethoheptazine and a combination of ethoheptazine and aspirin as analgesic agents in relation to certain known compounds of recognized value and also in relation to a placebo.

In order not only to test the clinical effect of the drugs but also to obtain a check on the methods used, two parallel techniques were employed. In one portion of the study, the double-blind technique was used and the results were subjected to statistical analysis. In the second portion, a single-blind technique was used and the data were subjected to sequential analysis. Sequential analysis is an a priori form of statistical analysis which treats the number of observations as a random variable and calls for the termination of the experiment just as soon as enough data are at hand to support a proposed hypothesis at an arbitrarily high level of statistical significance. This method has proved economical and useful in industry and in certain phases of wartime research.[4] This, however, is one of the few times that sequential analysis has been used in a study of this type. As indicated by the results of the second portion of this study and of previous studies by Bartholomay [5] and by Armitage,[6] such a method of analysis is proving to be a useful tool in clinical investigation. The number of observations required for validation of the hypothesis of effectiveness by the sequential probability ratio test (SPRT) is far less than the number usually chosen arbitrarily for such a study, but the degree of statistical significance that can be attached to the results would appear to be as high as one could require. It therefore constitutes a new and powerful tool for studies of this type.

Plan of Study

In the first or completely blind portion of the study, the clinical effectiveness of the analgesic compounds subjected to testing was determined by administering the medicaments to 100 hospitalized patients with chronic pain due to various causes.

The diagnoses of the patients included in the study were as follows for the 71 patients who completed the study: rheumatoid arthritis, 20; hypertrophic arthritis (spine, neck, and head-neck), 20; metastatic carcinoma, 8; neurological disorders with deformity, amyotrophic lateral sclerosis, and progressive muscular dystrophy, 5; phantom limb after amputation and other similar limb pain, 6; cardiovascular disease, cerebrovascular accident, and hypertension, 9; and nonunion of fracture, 3.

The diagnosis for 29 patients who did not complete the study were as follows: rheumatoid arthri-

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tis, 11; hypertrophic arthritis, 9; cardiovascular disease, 6; nephritis, 1; amputation, 1; and gangrene of the foot, 1.

The patients ranged in age from 42 to 78 years. Two-thirds of the patients were males. Most were semiambulatory, in that they were allowed bathroom privileges and meals were taken in a dining room adjacent to the ward. In each case the patient suffered pain of sufficient severity to require analgesics, and most had previously received aspirin or codeine and aspirin routinely for relief.

The usual precautions for double-blind study techniques, as set forth in previous publications,[7] were observed. All patients received each of the test medicaments at random. The test period was seven days for each medicament. There was no rest period between medications. The random rotation of administration was considered adequate to compensate for any carry-over of analgesic action. The five compounds to be tested were prepared in capsule form, and all capsules were identical in appearance. Medicaments were delivered in five separate cartons, labeled A, B, C, D, and E, each containing 100 bottles of the same drug. Each of the 500 bottles had a different number. Delivery was made in this manner so that a preselected, randomized order of administration of the five compounds could be prepared for each patient. These "patient packages" of five bottles, to be given in a preselected order, were stored in a special closet to which only the ward nurses had access. The individual who was responsible for the randomization had no contact with the patients and had no knowledge of the compounds contained in the cartons, although he did know that five compounds, one of which was a placebo, were being tested. Naturally, the code was not revealed to any of us until after the data were analyzed and the medicaments were rated according to the clinical effectiveness of each.

The dosage used throughout the study was two capsules four times a day. The patients were questioned, in a standard manner, three times a day by a "disinterested" technician, and note was made of the degree of relief reported (no relief, very slight, moderate, almost complete, or complete) and the daily mean, side-effects (nausea or vomiting, vertigo, constipation, excitement, drowsiness, and shakiness), and any other pertinent information concerning other medicaments given, spontaneous remarks of patient,. actual vomiting, cramps, or diarrhea, and type of pain.

The five drugs tested by the double-blind technique and the dosages given were as follows: (1) aspirin, 600 mg., (2) ethoheptazine hydrochloride, 100 mg. (equivalent to 87.8 mg. base), (3) codeine sulfate, 30 mg., plus aspirin, 600 mg., (4) ethoheptazine citrate, 100 mg., plus aspirin, 600 mg. (Zactirin), and (5) placebo (lactose). The amounts indicated represent the amounts contained in each dose (two capsules).

In the single-blind portion of the study, three medicaments, labeled no. 1, no. 2, and no. 3, were used in the test. The three were supplied in capsules which were identical in appearance. In this case, it was necessary to supply one of the investigators with the code so that the drugs could be given in pairs, in order to apply the double dichotomy form of the SPRT. Actually, however, the medicament being administered was not known by observer, statistician, or patient. This was accomplished by tearing off the label. It was known that three agents were involved: a placebo, codeine plus aspirin, and ethoheptazine plus aspirin.

Patients subjected to this portion of the study included ambulatory custodial patients with transient pain, such as that caused by headache, arthritis, bursitis, and other conditions commonly seen in outpatient practice. All patients were males between the ages of 58 and 84 years. The same medicament was administered to a given patient three times daily or as needed. The dose in each case was two capsules, and the amounts of the drugs contained in each dose were the same as used in the double-blind study with five unknown agents. The response after each administration was graded after questioning by an observing nurse. The report chart for this portion of the study was similar to that for the other, and the degree of pain relief was graded in the same manner.

Evaluation of Results

The first and second portions of the study were treated independently. Therefore, the results of both parts are reported separately in order to facilitate a comparison of the two approaches.

In the double-blind study, involving five unknowns, the drug therapy in all 100 patients was started on a given date and the medicament was changed every seven days until the study was completed. Seventy-one patients completed the study. The accumulated data were then subjected to analysis, and the medicaments were graded according to the clinical effectiveness of each. The total number of observations, therefore, was 71 × 3 × 7 × 5, or approximately 7,500. If a patient refused medication even once he was dropped from the study. Refusals or absence from the wards for various reasons accounted for 22 of those patients who did not finish the study. In addition, four patients were transferred, one had persistent nausea, and one died of gangrene associated with severe arteriosclerotic vascular disease and hemiplegia.

The first step in the statistical analysis was calculation of the average effectiveness of each of the five drugs under study. This average effectiveness was calculated by adding the 21 numerical values of the observations made during one week of treatment in each patient. The 71 individual sums were then added and divided by the total number (3 × 7 × 71) of all observations of this drug. The patient's preference or rating for each of the five coded drugs was computed. Each drug was rated 1, 2, 3, 4, or 5, 1 being the least and 5 the most effective. Table 1 shows the five coded drugs ranked according to average effectiveness and the number of times each rating by a patient was recorded for each of the five drugs.

Drug A received the lowest total score by 58 patients, which would indicate that it was the least effective agent; only 1 patient found this drug the most effective. Drug E never received the lowest total score, and B and D only rarely were rated as the least effective.

In order to interpret the data in this table, we calculated the weighted average for each drug. This was done by multiplying the number of patients by their rating number for a specific drug. The five products were then added and the sum was divided by the number of patients. The weighted average of drug A is, therefore, 1.27 (58 × 1 + 10 × 2 + 1 × 3 + 1 × 4 + 1 × 5, divided by 71).

The weighted averages for the five coded drugs are, in order of rank. for A, 1.27; C, 2.18, B, 3.65, E, 3.90, and D, 3.99. The ranking of the weighted averages of the various drugs corresponds closely to the average effectiveness, as shown in table 1, with the exception of drugs D and E, which are reversed in order.

Notwithstanding the fact that two different approaches of evaluating the test results provided practically identical information, it still must be proved that the averages are actually significantly different. Various t-tests were performed with the data obtained from the different medicaments in pairs. (The t-test is a widely used, short statistical procedure in which the likelihood that two sets of data are significantly different can be calculated—in other words, that any pair of medicaments are or are not significantly different in effect. When the t-values are given, the degree of accuracy of the conclusions can be checked by the reader.) It was not possible to find a significant difference between drugs D and E, and we must, therefore, conclude that these are identical in effectiveness as pain relievers. Drug A was significantly less effective than any of the other four drugs. Table 2 presents some of the important t-values resulting from the comparison of pairs of drugs.

TABLE 1.—*Average Effectiveness of Each Drug with Patients' Rating*

		Effectiveness					
			Patient's Rating				
Rank*	Code	Av	1	2	3	4	5
1	A	0.765	58	10	1	1	1
2	C	1.409	10	42	15	4	0
3	B	2.302	2	6	23	23	17
4	D	2.524	1	6	15	22	27
5	E	2.588	0	7	17	23	24

* Ranging from 1 (least effective) to 5 (most effective) in order of effectiveness

At this stage of the investigation the code was given to us. Drug A was placebo; B was ethoheptazine; C was aspirin; D was ethoheptazine plus aspirin; and E was codeine plus aspirin.

TABLE 2.—*Results of Statistical Procedures in Comparison of Drugs*

Drug Pairs	t Value*	p
A-B	16.77	<0.01
A-C	8.06	<0.01
B-C	11.17	<0.01
B-D	2.00	=0.05
B-E	2.55	<0.02
C-D	11.09	<0.01
C-E	13.71	<0.01
D-E	0.55	>0.50

* t values for 70 degrees of freedom When p is 0.05, t = 2.00 when p is 0.02, t = 2.38; and when p is 0.01, t = 2.65

From the previously given t-values, the following conclusions can therefore be made: 1. Ethoheptazine in a dose of 100 mg. plus aspirin in a dose of 600 mg. is as active a pain reliever as codeine in a dose of 30 mg. plus 600 mg of aspirin (when D and E are compared, t=0.55). 2 Aspirin alone, 600 mg., has a definite pain-relieving action as compared with a placebo (when A is compared with E, t=8.06). 3 Ethoheptazine, 100 mg., is more efficient than 600 mg. of aspirin alone (when B is compared with C, t=11.17). 4. Addition of 600 mg. of aspirin to ethoheptazine provides a significant increase in efficiency (when B is compared with D, t=2.00). 5. Addition of codeine, 30 mg., to aspirin, 600 mg., causes a significant improvement in pain relief (when C is compared with E, t=13.71). 6. Ethoheptazine, 100 mg., has a highly significant analgesic effect as compared with a placebo (when A is compared with B, t=16.77). 7. Codeine, 30 mg., plus aspirin, 600 mg, is significantly more effective than ethoheptazine, 100 mg (when B is compared with E, t=2.55). 8 Ethoheptazine, 100 mg., plus aspirin, 600 mg., is more effective than aspirin alone (when C is compared with D, t=11.09).

In the single-blind portion of the study, the estimate of effectiveness of the medication for the entire day was made from the average of the three response indexes. Generally, an average of 2.67, which represents approximately 70 to 80% effectiveness, was regarded as a "success," an average less than this, a "failure." There were exceptions to this rule, e. g., a record of 1, 2, and 4 would be regarded as a success. This transformation amounted to a meaningful way of changing semiquantitative data into all-or-none form, a form which is required by the structure of the SPRT.

The binomial form of SPRT[8] was used to test the hypothesis that a medicament, to be effective, must show less than 20% failure. To test such a hypothesis for a given medicament, the number of failures (d_m) must be plotted on a "sequential grid sheet"[8] against the total number of observations (m), adding points as the observations accumulate. The "grid" is composed of pairs of "acceptance" and "rejection" lines, each pair corresponding to a given level of statistical significance. Generally, the lowest acceptance level is 5%, indicating that there are 5 chances in 100 of error in the decision either to accept or to reject the proposed hypothesis. The points (m and d_m) are joined to form a polygonal sequential curve. The first time that this curve crosses an acceptance line, the hypothesis is accepted at the corresponding statistical level and the experiment is terminated; if it first crosses a rejection line, the hypothesis is rejected at the corresponding level and the experiment is terminated.

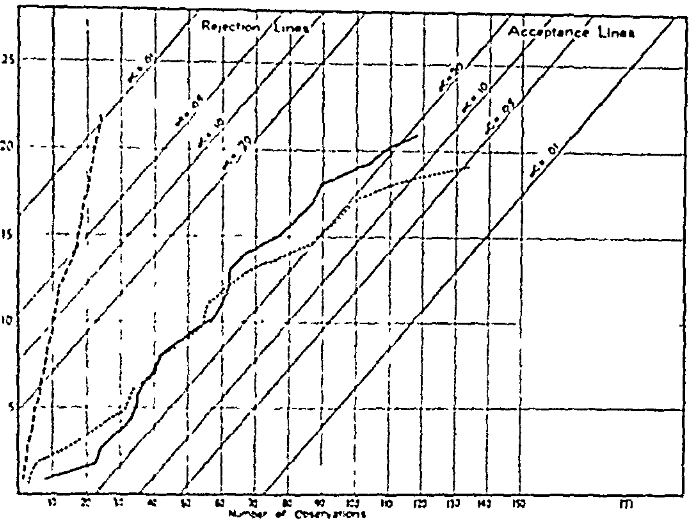

Fig. 1.—Sequential probability ratio test of hypothesis that a given medication is more than 80% effective. Drug no. 1 is shown by straight line, no. 2 by broken line, and no. 3 by dotted line.

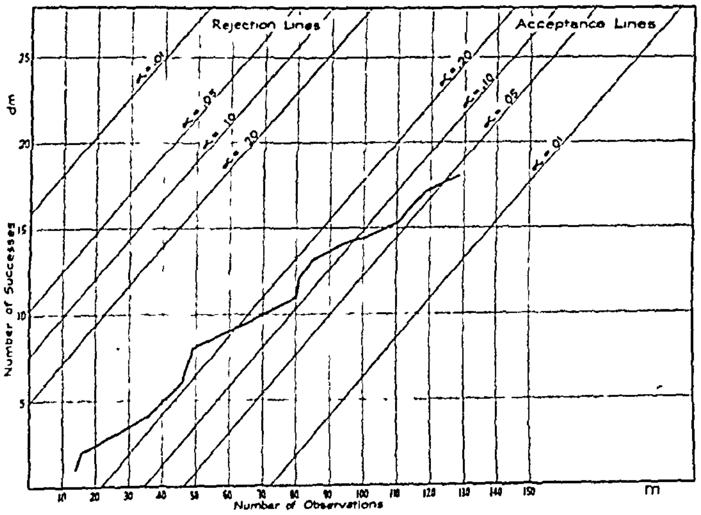

Fig. 2.—Sequential probability ratio test of hypothesis that drug no. 2 (placebo) is less than 20% effective.

After 130 observations on 35 patients, the hypothesis that no. 3 was effective in more than 80% of the cases was accepted at the 5% level (fig. 1). After only 16 observations, this same hypothesis applied to no. 2 was rejected also at the 5% level. In the case of no. 1, there were not enough successes in 130 observations either to accept or to reject this hypothesis—further observations would have to be made. Inspection of figure 1 shows that after 130 observations had been made, the trend of the sequential curve for no. 1 was most definitely in the direction of acceptance at a higher level.

The testing was continued with no. 2 to see if a hypothesis could be validated to the effect that no. 2 should be effective in less than 20% of all cases. As figure 2 shows, this hypothesis was accepted at the 5% level after 130 cases.

These results seemed to indicate that no. 3 was either ethoheptazine plus aspirin or codeine plus aspirin and that no. 2 was a placebo. A "double dichotomy"[4] type of sequential test was applied separately to see if the difference between no. 1 and no. 3 was detectable. After 30 observations this test was abandoned because there seemed to be no evidence whatever of a perceptible difference between the two. This gave further presumptive evidence that in the long run the course of no. 1 should approximate that of no. 3.

TABLE 3.—*Side-effects Recorded During Study of Drug Administration in Seventy-one Patients*

	Drug Used†				
Side-effects*	Placebo (A)	Etho-hepta-zine (B)	Aspirin (C)	Etho-heptazine and Aspirin (D)	Codeine and Aspirin (E)
Nausea or vomiting, no.	5	2	3	1	1
Vertigo, no.	0	1	1	2	1
Constipation, no.	1	0	1	1	1
Excitement, no.	5	3	2	2	2
Drowsiness, no.	2	1	0	4	1
Shakiness, no.	3	3	1	2	1
Total	16	10	8	12	7

* Given in number of patients in whom each was recorded.
† Letter in parentheses refers to code used in study.

At the conclusion of our sequential testing procedure, the identity of the code numbers was made known. As predicted, no. 2 was the placebo, no. 1, ethoheptazine plus aspirin, and no. 3, codeine plus aspirin.

In the group of 100 patients receiving the five coded drugs, an attempt was made to gather data concerning the side-effects observed or of which reports were volunteered. The number of patients experiencing certain side-effects during the treatment period is presented in table 3. This represents some repetition of patients. Actually, out of 71 patients completing the study, 18 experienced side-effects, 13 to one drug and 5 to more than 1 drug. Thus, 18 patients experienced one or more side-effects to one or more drugs for a total of 25 instances of side-effects in 5 × 71 patient treatment courses, which were distributed as follows: A, 8; B, 5; C, 4; D, 6; and E, 2.

The number of side-effects experienced after any given medication and the number of specific side-effects occurring after any given medication were too small to warrant the drawing of conclusions. Also, as has been pointed out by others, liability of analgesic agents to give side-effects is more properly determined in healthy adults.

Comment

Comparison of the results of the two techniques reveals a high degree of agreement. Using the t-test, five unknowns were tested and the relative clinical effectiveness of each was determined. By sequential analysis, alternates only were measured against one another. An advantage in this method lies in its value in determining whether a given medicament has a measurable clinical effect in comparison with a placebo or a known drug. If the clinical differences are slight, a large number of observations might be required before the zone of significance is entered, although this number could be lower than that required in a complete variance analysis. This particular study proved fortunate for comparative purposes, since the clinical differences between the medicaments were sufficiently marked to permit a clear-cut decision as to the relative effectiveness of each drug.

Conclusions

With use of both a completely blind study technique (71 patients) and a single-blind method (35 patients) and employing sequential analysis, the following conclusions became evident relating to the effectiveness of ethoheptazine therapy.

Ethoheptazine, in doses of 100 mg., was found to be more active than aspirin as an analgesic. However, the same dose of ethoheptazine, given in combination with 600 mg. of aspirin, was found to have an analgesic action of the same level of effectiveness as codeine in doses of 30 mg. in combination with 600 mg. of aspirin. At the dosage levels used, there were no significant side-effects.

A cross comparison reveals a high degree of accuracy in the completely blind method with confirmation by sequential analysis in this particular study. Of general scientific interest in this work is the role which has been demonstrated for sequential analysis in drug-testing experiments.

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THE PREDIABETIC STATE AND LARGE BABIES.—Probably all who have cared for many diabetic patients have had occasion to observe some of the characteristics of diabetes in individuals who lacked any detectable evidences of disturbed carbohydrate metabolism. Even the response to the glucose tolerance test has been normal. But, after some years have elapsed hyperglycemia and glycosuria appear. A common indication of a prediabetic state is seen in women who give birth to large babies. The prediction that the mother of an infant weighing more than 10 pounds at birth will ultimately develop clinical diabetes is more likely than not to be fulfilled. This result is especially likely if the mother has diabetic relatives. —G. G. Duncan, The Modern Aspects of the Diabetic Problem, *Bulletin of the New York Academy of Medicine*, February, 1958.

PAM (PYRIDINE-2-ALDOXIME METHIODIDE) THERAPY FOR ALKYLPHOSPHATE POISONING

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The prompt antidotal effect of PAM (pyridine-2-aldoxime methiodide) in alkylphosphate poisoning was demonstrated in five cases here reported. The patients were all farm workers who had been spraying fields with parathion. Cholinesterase determinations in both serum and erythrocytes were carried out and clearly showed the inhibitory effect of the parathion upon the enzyme. Intravenous administration of PAM relieved some of the symptoms instantly, and cholinesterase determinations demonstrated the reactivation of the enzyme. PAM was effective after either oral or parenteral administration and could be given in adequate doses without disagreeable side-effects. It also relieved certain symptoms, such as muscular fasciculation, that are not relieved by atropine.

Of the many alkylphosphate compounds synthesized in the past 20 years, some have come to be used practically as remedies (isoflurophate [DFP]) or as insecticides (tetraethylpyrophosphate [TEPP], parathion), especially after World War II.[1] In Japan, parathion has been widely used as an agricultural insecticide, mainly for rice cultivation, since 1952, and its use has been encouraged by the Ministry of Agriculture and Forestry in order to increase the rice crop. It is the consensus of opinion that the use of parathion as an insecticide was in a large measure responsible for the bumper crop of rice in 1955 in Japan. Useful as it is, parathion also has its shortcoming, namely, parathion poisoning. The estimated number of victims during the past five years is said to be over 6,000. Consequently, many studies have been made on poisoning by alkylphosphate compounds, and, on the basis of numerous clinical observations,[2] we established a standard atropine treatment[3] by which many victims of parathion poisoning have been saved in Japan. However, it is to be regretted that atropine is not the specific medicament.

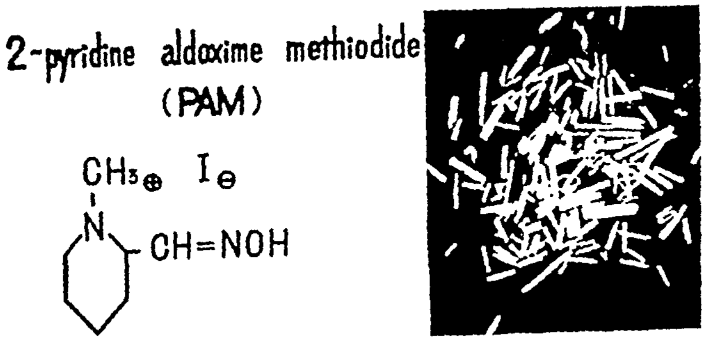

Fig. 1.—Structural formula and crystal of PAM (pyridine-2-aldoxime methiodide).

Recently, I. B. Wilson and his colleagues of Columbia University introduced PAM (pyridine-2-aldoxime methiodide) as a specific reactivator of alkylphosphate-inhibited acetylcholinesterase. The inhibition of this enzyme had been shown by Nachmansohn to be the cause of the toxic effects of alkylphosphates.[4] PAM successfully reactivated the inhibited acetylcholinesterase in vitro,[5] and hundreds of mice injected with lethal doses of alkylphosphates were spared their lives by PAM injection.[6] But in vivo, the mechanism of PAM has not yet been pursued in full detail, especially so with regard to its clinical effects.[7] PAM is a yellow rhombic crystal with a melting point of 219 C (decomposed). It is 5% soluble in water and practically insoluble in alcohol. The structural formula of PAM is shown in figure 1. PAM itself does not hydrolyze acetylcholine in vitro. The LD_{50} (milligrams per kilogram of body weight) of PAM on mice was estimated as 136[6] and 209[8] (187-233) in the case of intraperitoneal injection, and 140 (125-157)[8] by subcutaneous injection. In the present study, 5% PAM solution in water was used. The present paper is intended to report in vivo experiments with laboratory rabbits and the therapeutic effects of PAM on human patients suffering from acute parathion poisoning.

Blood cholinesterase activity was assayed manometrically with Tamai's modification[9] of Ammon's method[10] at 38 C in a medium containing 0.124 M sodium chloride, 0.025 M sodium bicarbonate, 0.0025 M potassium chloride, 0.0018 M calcium chloride, and acetylcholine as substrate (0.025 M for human serum cholinesterase and 0.0025 M for animal serum cholinesterase). The estimation of cholinesterase activity was based on carbon dioxide volume produced during 30 minutes after the addition of substrate. The determination of mucoprotein and protein sulfhydryl (SH) radical activity was performed polarographically.

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White male rabbits, each weighing about 2 kg., vere used. PAM itself had no influence on the general appearance and blood cholinesterase activity of rabbits. Subcutaneous injection of 10 mg. per ilogram of body weight of parathion emulsion approximately LD_{50}) resulted in an inhibition of blood cholinesterase and produced symptoms of poisoning such as muscular fasciculation, salivation, and noisy respiration. Intravenous administration of PAM in a rabbit previously injected with parahion emulsion resulted in a striking reactivation of blood cholinesterase and the disappearance of ymptoms in a short period of time (fig. 2, *upper left*). Twenty-four hours after the parathion injecion, however, this rabbit died due to the reinhibiion of cholinesterase, proving the effect of PAM to be only transient.

Repeated injections of relaively large doses of PAM maintained the blood cholinesterase activity after it had been retored, and no symptoms could be observed (fig. 2, *lower left*). The same method of PAM administration proved to be capable of prolonging the life of a abbit that had received even as high a dose as 50 mg. per kilogram of body weight of parahion by injection. In this animal, he first PAM injection was the most effective in reactivating cholinesterase, but later injecions gradually lost their effeciveness (fig. 2, *upper right*). In hese experiments, PAM was inected while cholinesterase acivity was being inhibited by parathion and the effect of PAM was transient; but the cholinesterase reinhibition was slight when PAM was given in the course of natural cholinesterase recovery (fig. 2, *lower right*). PAM was equally effective when given by subcutaneous injection (fig. 3, *upper left*) and orally (fig. 3, *upper right*). Oral administration of PAM could likewise protect against the cholinesterase-inhibiting action of parathion (fig. 3, *lower left* and *right*).

Parathion poisoning is divided into four types,[3] namely, serious, moderate, slight, and latent. This classification is now being used widely in Japan. The five cases reported here were all serious.

Report of Cases

CASE 1.—A 17-year-old boy sprayed a rice field with a parathion solution. The next evening he became ill. After receiving by injection 20 ampuls of atropine, each containing 0.5 mg., the patient was brought to our clinic three hours after the onset of symptoms (Sept. 2, 1956). He then was in the convalescent stage. An intravenous injection of 0.1 Gm. of PAM produced neither changes of symptoms nor toxic effect, but a transient, slight recovery of red blood cell cholinesterase (fig. 4, *upper left*). This boy improved six hours after the onset of poisoning.

CASE 2.—A 24-year-old farmer sprayed a rice field with a parathion solution. In the afternoon of the following day (Sept. 2, 1956) he fell ill, with nausea, vomiting, abdominal cramps, diarrhea, profuse sweating, salivation, involuntary micturition, muscular fasciculation, and coma. He was given 10 intravenous injections of 0.1 Gm. of PAM each during a period of three and one-half hours. By the time of the last PAM injection, all the symptoms had disappeared and no toxic effect of PAM was discernible. In this case, the changes of blood cholinesterase activity were impressive in that the red blood cell cholinesterase was reactivated by degrees and rose above normal. On the other hand, serum cholinesterase activity increased only slightly, but it required only one-half the time for this activity to return to normal compared with that of untreated cases (fig. 4, *lower left*).

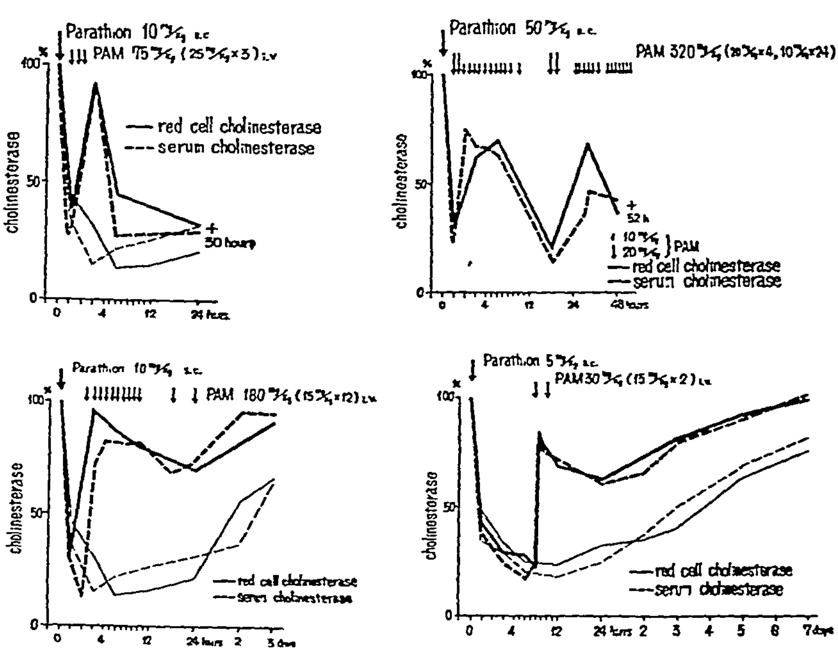

Fig. 2.—Blood cholinesterase activity in four rabbits injected with parathion then treated with PAM (heavy lines) compared with untreated rabbits (light lines). *Upper left*, transitory recovery. *Lower left*, continuous reactivation by repeated intravenous injections of PAM. *Upper right*, prolonged life and recovery of cholinesterase in rabbit injected subcutaneously with 50 mg. per kilogram of body weight of parathion. *Lower right*, slight reinhibition of activity during natural cholinesterase recovery.

CASE 3.—This 24-year-old farmer had been engaged in spraying a rice field with a parathion solution. On the third day he fell ill and was admitted to our clinic (Sept. 3, 1956). He then complained of dizziness, nausea, vomiting, headache, salivation, profuse sweating, and slight muscular fasciculation. At once 0.5 Gm. of PAM was injected intravenously and no toxic sign appeared; therefore, another injection of 0.4 Gm. of PAM was made 10 minutes later. Immediately after the second injection, all the patient's complaints disappeared. Complete recovery of red blood cell cholinesterase took place 40 minutes after the PAM injection, and serum cholinesterase activity was slightly increased and returned to normal in 15 days (fig. 4, *upper right*).

Case 4.—A 37-year-old farmer visited our clinic Sept. 10, 1956, on the eighth day after the onset of acute parathion poisoning. He was complaining of only slight headache and there were no positive physical findings. Blood cholinesterase activity was on the way to recovery. At the patient's request, a rapid intravenous injection of 1 Gm. of PAM was given. He felt discomfort for less than one minute and showed no toxic symptoms. The blood cholinesterase value revealed little change (fig. 4, *lower right*).

Case 5.—A farmer, aged 28, was admitted to this clinic Sept. 6, 1956. This case is supposed to be the first of parathion poisoning ideally treated with PAM and is, therefore, presented in detail. This man was engaged in spraying a rice field with 0.1% *parathion solution. At 1:30 p. m. on* the third day of work, he suffered from dizziness, profuse sweating, salivation, and tightness of the chest, but continued *to* work *until 3* p. m. when nausea and vomiting began. Shortly thereafter he went home and thoroughly washed himself. At 4 p. m. he was attacked by severe

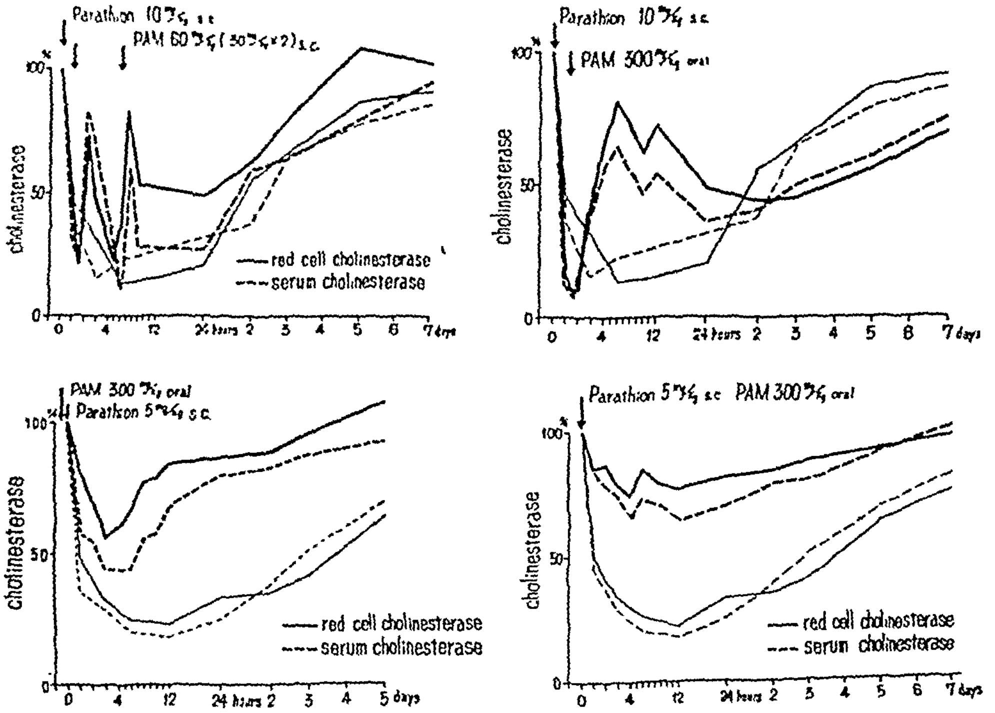

Fig. 3.—Blood cholinesterase activity in four rabbits injected with parathion then treated with PAM (heavy lines) compared with untreated rabbits (light lines). *Upper left,* transitory reactivation after single subcutaneous injection of PAM. *Upper right,* slower reactivation and reinhibition after oral dose of PAM. *Lower left,* slight inhibition after oral dose of PAM 30 minutes before subcutaneous injection of parathion. *Lower right,* slight and slow inhibition after oral dose of PAM administered simultaneously with subcutaneous injection of parathion.

dizziness, slurred speech, blurred vision, and coma. After the injection of three ampuls of atropine, he was brought to our clinic at 6:30 p. m.

Physical examination revealed a well-developed male, seriously ill and unresponsive. His respiration was slow and seemed difficult. The pulse rate was 130 per minute and blood pressure 170/111 mm. Hg. The body temperature *was* 37.5 C (99 F). Muscular fasciculation was very marked and generalized. He was no longer sweating but had excessive salivation. The pupils were pinpoint *in* size, reacting scarcely to light. The heart *was slightly* enlarged to percussion, with the heart sounds powerful and good. The lungs and abdomen were normal. Tendon reflexes of the extremities were absent. Cholinesterase activity of red blood cells was 28.9 ml. carbon dioxide volume, approximately 13% of normal, and that of serum was 4.9 ml. carbon dioxide volume, *only* 0.6% of normal. Serum mucoprotein was 38.8% and serum protein SH radical activity was 47.5% of normal. The leukocyte count was 19,900 per cubic millimeter, with 87% polymorphonuclear cells, 10% lymphocytes, and 3% monocytes. Eosinophils were absent. The hemoglobin value was 12.6 Gm. per 100 ml., with 5,170,000 erythrocytes per cubic millimeter. Urinalysis showed 1+ sugar, and ± urobilinogen with *p*-nitrophenol 133.8 mcg. per 100 ml. The blood sugar level was 149 mg. per 100 ml. Cephalin cholesterol flocculation, Takata-Ara, icterus index, and other tests on serum were normal. An electrocardiogram showed right bundle-branch block, probably having some connection with the poisoning.

At *6:37 p. m., seven minutes* after admission, the patient was given 1 Gm. of PAM *intravenously.* The muscular fasciculations diminished instantly except in certain parts of the chest and legs. He was awake and responsive. At 6:41 p. m. blood pressure was 158/80 mm. Hg. Respiration quieted down. At 6:58 p. m., 21 minutes after PAM injection, the muscular fasciculation disappeared completely and no symptoms could then be found. The course of the blood cholinesterase activity is given in figure 5, *left.* This activity returned to normal within 10 minutes after the PAM injection, while the serum cholinesterase was reactivated only transiently, but returned to normal earlier than that of untreated patients. The courses of serum mucoprotein and serum protein SH radical activity are given in figure 5, *right*. Both show a course similar to that of serum cholinesterase. In other cases, serum mucoprotein and serum protein SH radical activity are also similar to that of serum cholinesterase.

Comment

The administration of PAM [illegible] symptoms of parathion poisoning. The effect observed was more remarkable in the clinical experiments than in the animal experiments. In case 1, the clinical improvement was scarcely noticeable, due probably to the small dose of PAM. In case 2, the effect was somewhat equivocal, but in cases 3 and 5, where a sufficient quantity of PAM had been administered in a single dose, dramatic effects were observed at the time of the injection; recovery of a clear consciousness, disappearance of muscular fasciculations, and improvement of respiratory function. In all of these cases, the dose of atropine was not large enough to affect the symptoms, except in case 1, in which PAM had little effect. The administration of atropine, which is considered to be an effective medicament for alkylphosphate poisoning, can relieve only a portion of the symptoms and does not affect others, such as muscular fasciculation. Besides, it has shortcomings in that it requires a large dose to be effective, with attendant unpleasant side-effects. With the administration of PAM, however, all the symptoms were relieved and there arose no unpleasant side-effects. From this fact it may be said that PAM is the corrective and specific therapy for alkylphosphate poisoning.

Cholinesterase activity of red blood cells was instantly and completely restored, but the return of this activity in the serum was transient. Ten minutes after PAM injection, cholinesterase activity of red blood cells recovered to normal, as observed in case 5. Such a phenomenon could not be expected with previous forms of therapy. The activity then decreased to some extent but remained within the normal limit in the human experiments. This finding is quite surprising, since without PAM administration the recovery of cholinesterase activity generally takes quite long (a month or more in serious cases), and it is not in any way affected by atropine treatment. The recovery of serum cholinesterase activity, however, was slighter and transient, but even the serum cholinesterase regained normal activity in about half the time as in untreated cases.

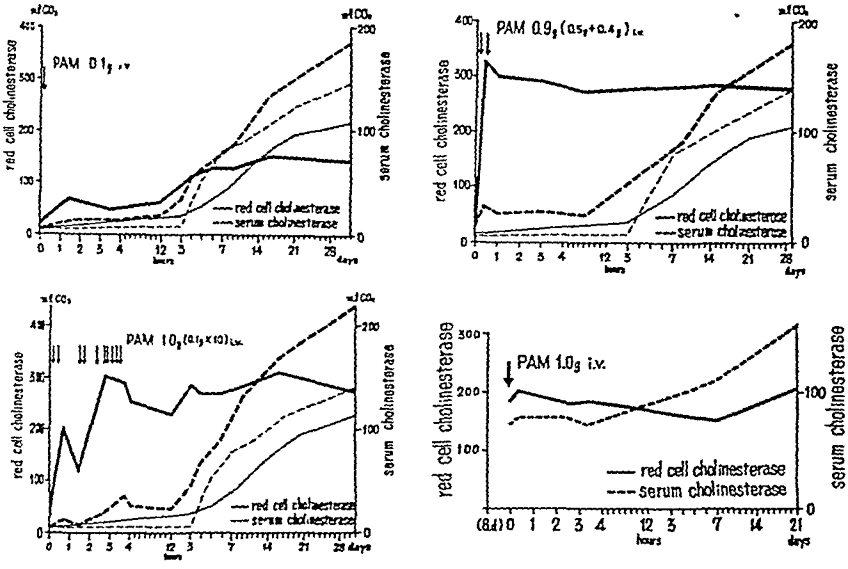

Fig. 4.—Blood cholinesterase activity in four patients with serious type of parathion poisoning treated with PAM (heavy lines) compared with untreated patients (light lines). *Upper left*, transient, slight recovery after intraveous injection of 0.1 Gm. of PAM (case 1). *Lower left*, recovery to normal after 10 intravenous injections of 0.1 Gm. of PAM in three and one-half hours (case 2). *Upper right*, instantaneous recovery after total of 0.9 Gm. of PAM given in two doses (case 3). *Lower right*, little change after 1 Gm. of PAM on eighth day after onset of poisoning (case 4).

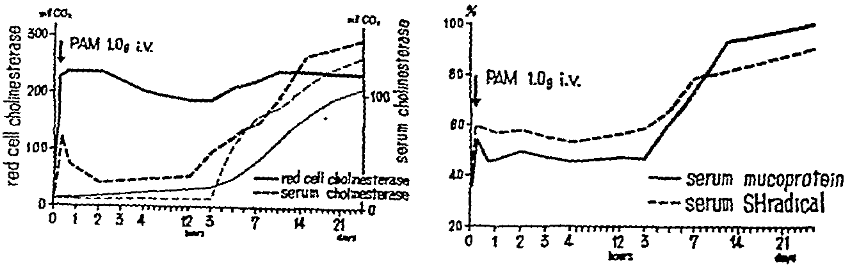

Fig. 5.—*Left*, instant and complete recovery of red blood cell cholinesterase activity and transient recovery of serum cholinesterase after single intravenous injection of 1 Gm. of PAM in patient with serious type of parathion poisoning (case 5, heavy lines) compared with untreated patient (light lines). *Right*, serum mucoprotein and serum protein SH radical activity show course similar to that of serum cholinesterase (case 5).

There are two types of cholinesterase, true or acetylcholinesterase and nonspecific pseudocholinesterase. In humans, the former is contained in the nervous tissue and red blood cells and is considered to play a role in neurohumoral transmission. The latter is contained in serum and is considered to have essentially no function in neurohumoral transmission but is related closely to liver function. In the rabbit, the serum cholinesterase is the same as acetylcholinesterase. Thus this fact may make it comprehensible why the values of both serum and red blood cell cholinesterase behave alike in the rabbit while they do not in humans and why, in humans, all the symptoms disappear without restoration of serum cholinesterase activity.

From these results, it is obvious that the main effect produced by the administration of PAM is the restoration of the activity of acetylcholinesterase and the effect on pseudocholinesterase is but secondary. As the cholinesterase of the nervous tissue is of the true type, PAM is remarkably effective in the treatment of alkylphosphate poisoning. Kewitz and Wilson[6] rightly assumed that PAM probably reactivates only acetylcholinesterase in vivo, basing their assumption on in vitro experiments in which it has been found that PAM is a much poorer reactivator of human serum cholinesterase.

At present the diagnosis of alkylphosphate poisoning is based mainly on a decreased serum cholinesterase (pseudocholinesterase) value and on physical examination. It has been generally accepted that the degree of the damage in vivo caused by alkylphosphate poisoning may be estimated more exactly by measuring the acetylcholinesterase. We would venture to recommend rather the measuring of serum cholinesterase activity in making qualitative and quantitative diagnosis of alkylphosphate poisoning, because of the complexity of the determination of the activity of red blood cell cholinesterase and because of a relatively long time required in becoming proficient in the operation. Mydriasis, the most standard symptom of the diagnosis, has almost lost its significance in our clinic, as atropine is widely used in the treatment and nearly all the patients are admitted to our clinic after premedication with atropine. In the future, when PAM treatment attains universal recognition, it might be possible to diagnose the poisoning after administration of PAM, basing it not on the cholinesterase activity of red blood cells but on that of serum.

The behavior of serum mucoprotein varies in direct proportion to the activity of cholinesterase and the behavior of active protein SH radical of serum nearly coincides with that of serum mucoprotein. Changes other than cholinesterase activity in parathion poisoning have been recently observed by us with mucoprotein and active protein SH radical in serum, the findings of which are arousing a keen interest in Japan.[11] With PAM administration, the changes in serum mucoprotein are similar to those of cholinesterase, and those of active protein SH radical are also similar but less remarkable.

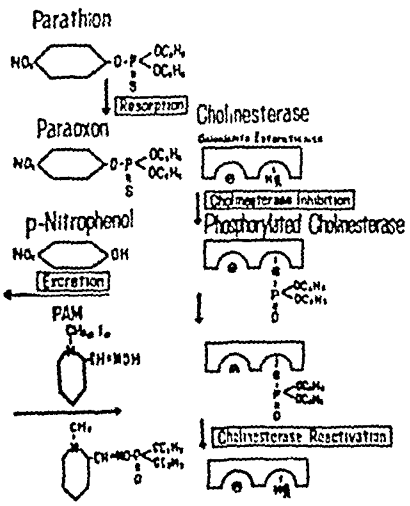
Parathion
Resorption
Cholinesterase
Paraoxon
Cholinesterase Inhibition
Phosphorylated Cholinesterase
p-Nitrophenol
Excretion
PAM
Cholinesterase Reactivation

Fig. 6.—Schematic diagram of inhibition of cholinesterase activity by parathion and its reactivation by PAM.

An intravenous injection of 1 Gm. of PAM is generally sufficient, but the dose may be increased if necessary. In cases 2, 3, and 5, an intravenous injection of 1 Gm. of PAM was sufficient to relieve the clinical symptoms and restore the cholinesterase activity of red blood cells. After the administration of PAM, a transient decrease of red blood cell cholinesterase activity is apt to occur, and so in serious cases there may be a possibility of recurrence of the symptoms together with the reinhibition of cholinesterase. But from our experience we find that if the patient survives for as long as 12 to 24 hours after the onset of symptoms, he generally recovers spontaneously. From these facts, a 1-Gm. dose may be sufficient and, if needed, 1 or 2 Gm. more of PAM may be given. Now we are considering giving larger doses of PAM in order to treat parathion poisoning more effectively. We believe that this is especially necessary with cases where larger amounts of parathion are taken, as in suicide cases. Because of the time element involved in the treatment of parathion poisoning, PAM was administered intravenously, but the subcutaneous route may be employed as well. Oral administration may be effective but not practical, for parathion poisoning, even in its mild form, is usually accompanied by nausea and vomiting.

No side-effect has been encountered in PAM administration. The side-effect of any new drug should be taken into serious consideration. In laboratory experiments with mice, the intravenous LD_{50} of PAM was found to be 140 mg. per kilogram of body weight (125-156), and this dose turned out to be sufficient in actual application. Some patients, as in cases 1 and 2, who received a smaller dose of PAM had vomiting, but it seemed to be a symptom caused by parathion poisoning rather than the drug itself as no such side-effect was found in the patients in cases 3 and 5, who were given larger doses of PAM. The patient in case 4, who received a rather rapid intravenous injection of PAM, complained of a slight discomfort which lasted only one minute. Abnormalities of the blood picture or of liver function were not observed. No pains or local changes of vein and skin at the site of the injection appeared. These facts seem to indicate that there are no serious side-effects of the conventional administration of PAM now in use, not even in large doses.

PAM had no influence on the cholinesterase activity of normal blood. After the administration of PAM, the blood cholinesterase activity in normal rabbits remained within its normal range, and this was also true in man (case 4). Wirth[12] and Jensen[13] have reported that most of the phosphoric acid derived from parathion was excreted within one to three days and then only in a small amount. Judging from these facts, it might be assumed that PAM acts only with the phosphorylated parathion (fig. 6).

PAM is expected to be used as a preventive agent of alkylphosphate poisoning. As already mentioned, PAM exhibits no effect when intravenously administered in small doses for prophylactic purposes. This is probably due to the prompt excretion or inactivation of PAM. On the other hand, PAM administered orally may be assumed to be a preventive agent against the decreasing cholinesterase activity in rabbits. In man it is expected to be more effective than in the rabbit, as we have seen in its therapeutic uses. Hitherto, alkylphosphate poisoning has been treated mainly by atropine, but now atropine is replaced by PAM. With the advent of PAM as a remedial agent of the metabolic defect produced by the alkylphosphate and also the nerve gas poisonings, a rapid progress of the study on enzyme mechanism might be expected. We hope that this study will contribute somehow to the progress in the treatment of alkylphosphate poisoning and to the welfare of mankind.

Summary

With administration of PAM (pyridine-2-aldoxime methiodide) as a specific reactivator of alkylphosphate-inhibited acetylcholinesterase, a prompt and complete relief of symptoms of this poisoning can be realized. Cholinesterase activity of red blood cells is restored instantly and completely recovers, that of the serum recovers only transiently. Serum mucoprotein varies in direct proportion to serum cholinesterase, and active protein sulfhydryal (SH) radical of serum varies nearly the same. Generally, an intravenous injection of 1 Gm. of PAM is sufficient, but the dose may be increased when necessary. No serious side-effect has been encountered. PAM exerts no influence on the cholinesterase activity of normal blood. PAM is expected to play an important role as a preventive agent of alkylphosphate poisoning.

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LYMPHATIC LEUKEMIA FOLLOWING GAMMA RADIATION.—One of a group of 56 Yorkshire-Hampshire hogs died on the 196th day of an experiment during which all received, until death, 50 r daily of gamma radiation from Co-60 given at a rate of about 30 r per hour. . . . The leukemic hog was the 36th of the group to die. All others died within a year, of a chronic irradiation sickness. No other leukemia was observed. This hog had previously received 425 r of gamma radiation given continuously at about 1.5 r per hour and had been allowed a recuperation period of 3 months before the subsequent irradiation program was initiated. The total accumulated dose was 10,225 r measured in air. The hog weighed 140 lb. when the experiment was initiated, 320 lb. when the chronic daily exposures began, 540 lb. 1 week before death, and 510 lb. at the time of death. Two weeks before death, lethargy and a retrogression of general condition was observed, and a short walk usually produced exhaustion. No glandular enlargements were seen, although a splenic rigidity and enlargement could be palpated through the abdominal wall during the last week of life. . . . The most notable changes seen at necropsy were: the inflamed and pustular tonsilar area, the huge spleen (11 × larger than others of the group; 7 × on a Gm. per kg. basis), the large (1.5 × normal of group on Gm. per kg. basis) and beautifully patterned liver due to excessive leukocytic infiltration along normal interlobular demarcations of pig liver, and the "hobnail" mucosa of the cecum. It may be restated that, except for the cervical lymph nodes, there were no obviously enlarged nodes in the body.—Lieut. Col. B. F. Trum, V. C., U. S. Army, and Lieut. Col. W. T. Carll, U. S. Army (Ret.), Lymphatic Leukemia in a Hog Following Atomic Exposure to Gamma Radiation—A Case Report, *Journal of the American Veterinary Medical Association,* Nov. 15, 1957.

TRAUMATIC PERIOSTITIS IN INFANTS AND CHILDREN

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The characteristic etiology and course of traumatic periostitis is illustrated by the case histories of seven children up to 10 years of age. Frequently the traumatic event itself was forgotten until frank disability led to thorough investigation. The symptoms sometimes suggested the paralysis of poliomyelitis, but roentgenograms showed characteristic periosteal lesions, explained the unwillingness of the child to use the affected extremity, and led to recollection of the injury. Spontaneous recovery followed in these traumatic cases. Three other cases are described to illustrate the importance of differential diagnosis. One proved to be infantile cortical hyperostosis, the cause of which is unknown; recovery was spontaneous. The other two were manifestations of scurvy and of congenital syphilis and responded promptly to the necessary specific treatment, which was dietary in the former and antibiotic in the latter.

It is common knowledge that the most frequent skeletal lesions in infants and children are the results of trauma. Usually, there is a history of a definite traumatic episode which is rapidly followed by pain, swelling, and, at times, deformity and immobility of an extremity. The diagnosis is often made before the roentgenogram definitely establishes the presence of a fracture or dislocation. Not infrequently, however, children are seen with roentgenologic evidence of trauma to the extremities when there is no history of injury and trauma is not even expected. The characteristic roentgenographic finding is a mild to marked periosteal reaction around the shaft of a long bone and, at times, a very faint fracture line or epiphysial separation with extensive periostitis.[1] The periostitis may be found in one or more bones or extremities. The true nature of these roentgenographic findings are often not recognized, the findings being mistaken for acute osteomyelitis, scurvy, and even malignant bone tumors.

Snedecor and Wilson,[2] in 1949, reported 11 cases of calcifying periostitis in newborn infants, all of whom were delivered by breech presentation. In almost every one of these infants tenderness and swelling of a leg was noted on the day after delivery. Roentgenograms taken on the second or third day of life were always negative. However, by the 7th or 10th day the roentgenogram showed extensive periostitis in the metaphysis of the long bones in the injured extremity. These authors postulated that the strong manual pull exerted on the infant's legs in the breech delivery causes stripping of the periosteum and subperiosteal hemorrhage; the periosteum later becomes calcified, which shows up in the roentgenogram. The prognosis in their cases was uniformly good. Within two or three weeks the clinical symptoms disappeared and the roentgenograms showed less periosteal thickening.

Barmeyer, Alderson, and Cox,[3] in 1951, reported five cases of traumatic periostitis involving only the lower extremity in young children and infants. In each case, there was tenderness and slight swelling over the thigh or leg and the child limped or refused to bear weight on the leg. Initial roentgenograms were always negative, but 7 to 10 days after onset of complaints an ossifying periostitis appeared in the roentgenogram. Although history of an injury was not always obtained, these authors recognized the roentgenographic picture of periosteal proliferation as the result of trauma and differentiated this condition from other skeletal lesions of early childhood.

Silverman,[1] in 1953, emphasized trauma as the unrecognized cause of certain skeletal lesions in infants. He presented three cases of fractures which had not been suspected clinically as illustrations of "unrecognized skeletal trauma." The striking feature in the roentgenograms of these patients was the extensive periostitis surrounding the bone and the very faint fracture line. In none of the patients was there an adequate history of trauma until the roentgenographic findings indicated the need for a more careful questioning about the possibility of an injury.

Etiology

In the infant and young child, the periosteum is more loosely attached than in the adult and strips off more easily. Even relatively trivial trauma may cause subperiosteal hemorrhage and extensive periosteal stripping.[1] After organization of subperiosteal hematoma, calcification and formation of new subperiosteal bone may be manifested in the roentgenogram. The new subperiosteal bone involves only the shaft and never extends beyond the epiphysial line. In the roentgenogram the "subperiosteal cloaking" may appear as a faint line along the shaft or may be massive enough to resemble

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e calcified subperiosteal hematoma of scurvy, epending on the extent of the periosteal stripping. lthough a faint fracture line of an epiphysial dislacement may be seen in the roentgenogram, these ndings are overshadowed by the extensive new ubperiosteal bone production. Certainly not all ıfants and children who are injured develop the linical signs or the roentgenographic manifestaions of traumatic periostitis. Perhaps, as Silverman as suggested,[1] there is an individual factor which redisposes some children more than others to the evelopment of subperiosteal hemorrhage after rauma.

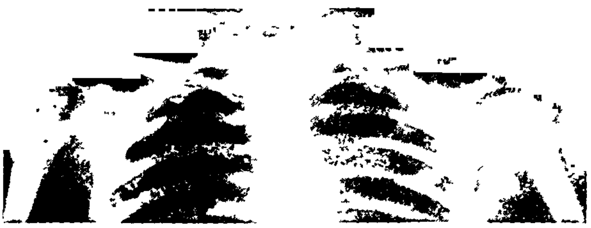

Fig. 1 (case 1).—Periostitis in proximal portion of huerus, bilateral.

The following case histories illustrate the clinial and roentgenological manifestations of trauatic periostitis and show how this condition may e confused with other diseases.

Report of Cases

Case 1.—A 2-year-old male infant was admitted to the orthern Indiana Children's Hospital on March 17, 1953, ith complaints of weakness in both arms and fever. About month prior to his admission, the child had been acutely l with an upper respiratory infection and a fever which ubsided after penicillin therapy. Several days after this lness, the mother noticed that he could not raise either rm. He was examined by a physician, who made a diagosis of anterior poliomyelitis in the convalescent stage. ospitalization was advised, but the patient was not seen gain until he was admitted to the hospital about two eeks later. Examination at this time showed a wellourished but somewhat irritable and listless child. He eemed to have pain in both shoulders and refused to move ither arm, although there was no evidence of any swelling, uscle atrophy, or paralysis in either upper extremity The ever of 101 F (38.3 C) was thought to be due to an ear nfection. Cerebrospinal fluid findings were entirely normal, nd the blood cell count was normal except for a mild levation of the leukocyte count (12,000 per cubic milliieter with 56% polymorphonuclear cells). Blood calcium, hosphorus, and phosphatase determinations, vitamin C level, nd coagulation and bleeding time were all normal. Antiiotic therapy was instituted, and within a few days the ever subsided and the patient became more alert and less ritable.

A few days after the child's admission to the hospital, a oentgenogram of his chest revealed a normal heart and ungs. The same roentgenogram, however, showed extensive eriosteal new bone and proliferation about the proximal haft of the humerus in both shoulders (fig. 1). A survey f the skeleton showed no abnormalities in any other bone. he patient's condition improved rapidly. By the time he vas discharged from the hospital, the 10th day after adnission, he was completely afebrile and able to move his arms without pain. Within two weeks after discharge he had regained most of the motion in his shoulders. He was not seen for further examination.

Comment.—After studying the roentgenograms, I attempted to obtain a history of trauma in this case. The mother was unaware of any injury or at least denied it. The whereabouts of the father was unknown. The mother being employed, the child was left in the care of other people most of the day. An impression was gained that the mother had some guilt feelings about the child. Repeated requests to bring the patient in for examination were ignored. Considering the child's environment, it was felt likely that he had suffered some injury or some form of physical punishment at some time before admission to the hospital.

Case 2.—A 17-month-old female infant was brought to her pediatrician on April 14, 1950, with the complaint of "throwing her left leg out when she walked." The child seemed to have no pain and had no fever and no limp. No tenderness or swelling could be found over the left lower extremity. A roentgenogram of the pelvis and both lower extremities showed a faint periostitis around the entire shaft of the left femur. This was interpreted by the roentgenologist as suggestive of a low-grade inflammatory process, such as osteomyelitis, but he added that the possibility of a tumor should be considered. The blood cell count was normal except for a moderately low leukocyte count. A tibial puncture was done, which revealed an entirely normal bone marrow. A roentgenogram of the left femur on April 27 showed an increase in the periostitis and some thickening of the cortex of the femur (fig. 2). On June 13, the roentgenogram was reported as showing "beginning healing of the inflammatory process." Final roentgenograms on Sept. 7, 1950, revealed complete disappearance of the periostitis but slight residual thickening of the cortex of the femoral shaft. Interestingly enough, this child sustained a supracondylar fracture of the right elbow about nine months later.

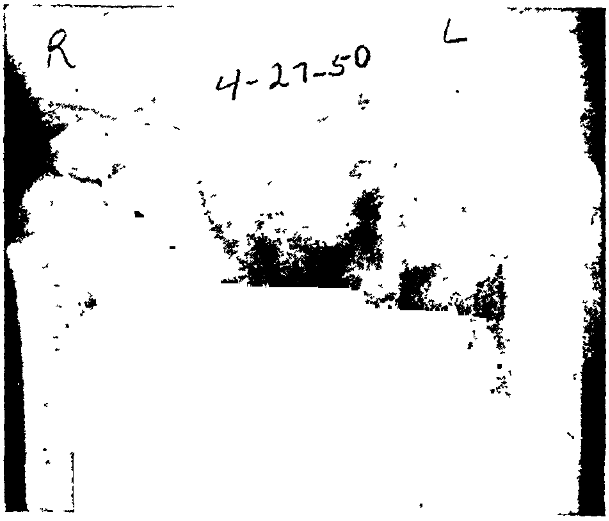

Fig. 2 (case 2).—Periostitis and some thickening of cortex in left femur.

Comment.—There was no history of any injury in this case; in fact, trauma was not even suspected by the child's physician or by the roentgenologist even after repeated roentgenographic examinations. It was not until three years later, after other cases of traumatic periostitis had been recognized, that the nature of the skeletal lesion in this patient was suspected.

CASE 3.—A 2-year-old female child was seen on Oct. 12, 1952, with a painful, swollen left elbow. Five weeks prior to that day the child was injured in an automobile accident when she was thrown against the dashboard. After the accident, the child complained of some pain in the elbow and was reluctant to move the arm. Examination revealed moderate swelling of the elbow, extending from the middle of the forearm to the middle of the upper arm. The elbow was extremely sensitive to palpation, and motion was markedly restricted. A roentgenogram of the elbow showed a rather marked periosteal proliferation about the distal shaft of the left humerus (fig. 3). A mild periostitis was also noted along the entire length of the left radius and ulna. The arm was placed in a sling. Examination a few months later showed that the child had recovered most of the motion in the elbow.

On June 20, 1953, the child was brought to the family physician with a complaint of pain in the shoulder and inability to move the left shoulder joint. The mother at first denied that the patient had been injured, but, when the presence of several bruises on the child's body and arms were called to her attention, she admitted having beaten the child and having pulled it out of the high chair by the left arm several days prior to the examination. A roentgenogram of the left shoulder and arm showed a mild periostitis near the proximal epiphysis of the humerus (fig. 3). Examination several weeks later showed that the patient had completely recovered from the shoulder injury. (The poor quality of the patient's environment was again illustrated some months later when the child was admitted to the hospital because of extreme dehydration and malnutrition.)

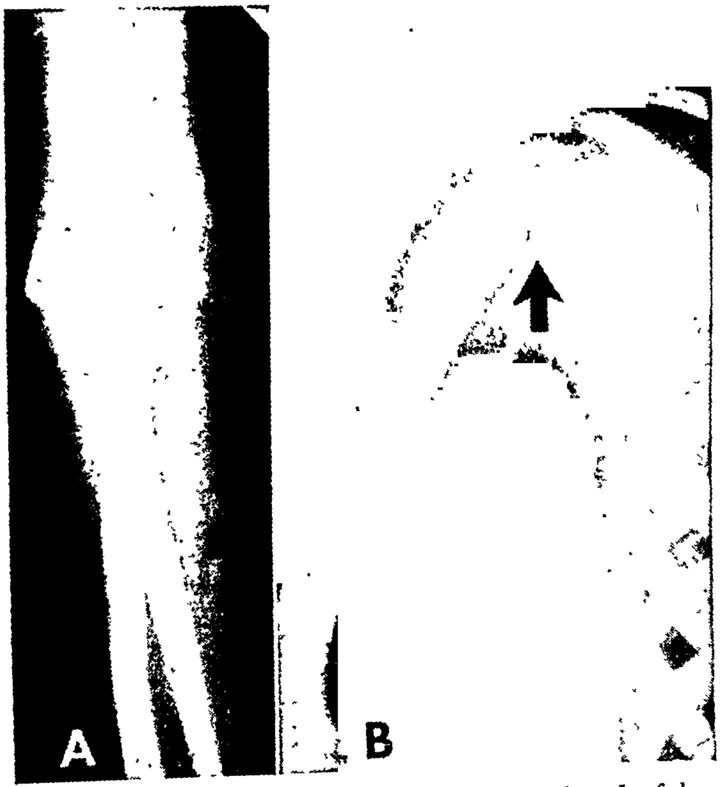

Fig. 3 (case 3).—*A*, periostitis along distal end of humerus, with less marked periostitis along radius and ulna. *B*, mild periostitis at proximal metaphysis of humerus.

CASE 4.—A 3½-year-old boy was brought to the emerg room of the hospital on Sept. 13, 1954, with the comp of pain in the left elbow after having fallen out of a s Examination of the elbow revealed moderate swelling, limitation of motion, and slight tenderness. The roent grams showed a faint periosteal proliferation along lower shaft of the humerus; this was thought to be d a previous injury (fig. 4). On questioning the mother ab any previous injury, it was learned that the boy had fal about three weeks before and had injured the same elb Since the child did not seem to have much pain at t time, he was not taken to a doctor. For several days, h ever, the boy did not use the arm well. The elbow seem to improve gradually until he injured it the second t

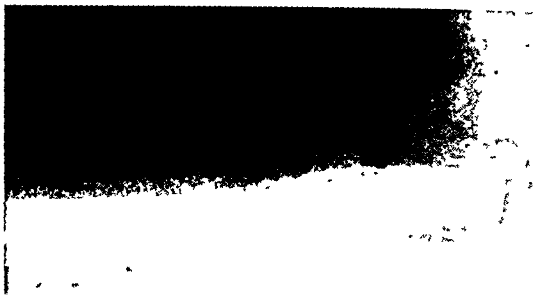

Fig. 4 (case 4).—Faint periostitis at lower end of h merus.

Comment.—In this case, a recent injury brough the patient to the hospital. The roentgenogra however, showed a mild periostitis caused by a earlier injury which was considered too trivial t require treatment. The earlier injury would hav been forgotten had not the roentgenograms late revealed it.

CASE 5.—An 8-month-old female infant was admitted the hospital on March 26, 1956, because of a two-d duration of painful swelling of the left shoulder and fai to move the left arm. Two weeks prior to admission t child fell off a chair on her left side, sustaining a br on the left side of the face. For four days before admis she had had an upper respiratory infection and fev Physical examination revealed a well-developed, w nourished infant who was extremely irritable, especial when being handled. The temperature was 101 F (38.3 C and her pulse rate 100 per minute. The tonsils were c ered with a white, patchy exudate. She would not mo her left arm except for slight motion in the fingers. Th left shoulder revealed a moderate swelling which was f and quite tender. The physical examination was otherw normal. Blood cell count, urinalysis, platelet count, blee ing time, and coagulation time were all normal. Spinal fl and blood culture showed negative results. Throat cult showed nonhemolytic Staphylococcus pyogenes var. aure Roentgenograms of the left shoulder showed only some s tissue swelling. The child was started on antibiotic thera and within a few days the fever subsided and the tonsil cleared up.

On April 3, 1956, the roentgenogram of the left should showed a fine line of periosteal elevation along the shaft o the humerus. A roentgenogram of the right shoulder w negative. Further roentgenographic examination of the l shoulder on April 10 showed a more marked periost proliferation involving the proximal two-thirds of the sha of the humerus (fig. 5). A skeletal survey showed negativ findings. The clinical course over the two weeks of ho pitalization was one of slow but steady improvement. O her discharge from the hospital, the child was moving h t arm as well as the right and had very little tenderness pain on manipulation, and the swelling had practically sappeared.

Comment.—In this case there was a definite his-ry of an injury about two weeks prior to the ıild's hospital admission. Although the initial oentgenograms of the left shoulder showed nega-ive results, progressive calcifying periostitis showed ıp on later examinations. The clinical recovery was almost complete when the roentgenogram still showed considerable periostitis.

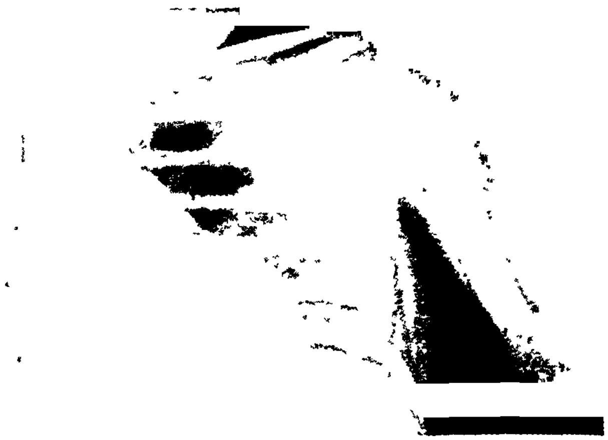

Fig. 5 (case 5).—Marked periostitis of entire shaft of umerus.

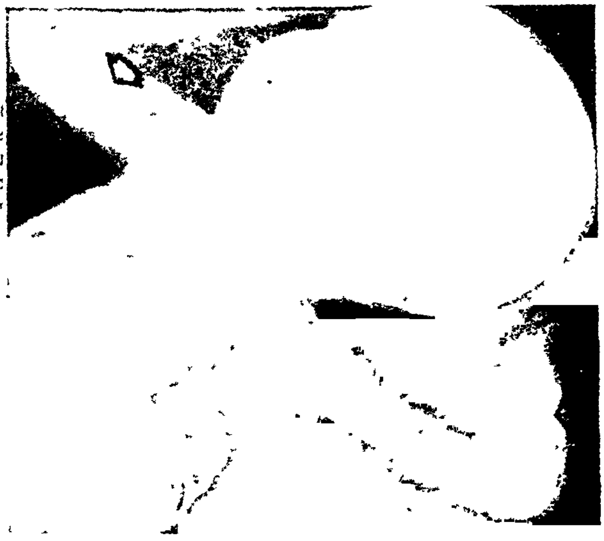

Fig. 6 (case 6).—Marked periostitis in left ulna and mild periostitis in right humerus.

CASE 6.—A 2-month-old female infant was seen on Sept. 2, 1955, because of a swelling of the left forearm and immobility of the left arm. Physical examination was negative except for moderate swelling and tenderness over the left forearm and pain on handling. There was no fever. The roentgenogram showed marked periosteal proliferation along the shaft of the left ulna and to a lesser extent of the right humerus (fig. 6). There was no history of any special injury, but the mother, on being questioned, admitted that she had grasped the baby's arms suddenly to keep her from falling several days prior to the onset of the complaints. The baby did not become ill and had no fever later. Within two weeks after the first examination she had recovered full use of her left arm. Examination on Oct. 11, 1955, showed only slight swelling on the ulnar side of the left forearm.

In this case, again, trauma was not suspected until the roentgenogram revealed the skeletal lesion. Furthermore, traumatic periostitis was found not only where there were symptoms (left ulna) but also at a site where there were no clinical manifestations (right humerus).

CASE 7.—A 10-year-old boy was seen on May 1, 1956, with the complaint of pain in his left leg. Two weeks prior to his examination, he had fallen while playing in the school gym and several boys had piled on top of him and stepped on his left leg. He did not have any pain until the next day, when he began to complain of an ache in the middle of the lower leg. The intensity of the pain had gradually increased until it began to keep him awake at night. Examination revealed a well-developed, healthy boy who walked with a definite limp on the left leg. There was slight swelling and exquisite localized tenderness to pressure over the anterior surface of the left tibia about 6 in. below the knee. The left calf measured ⅜ in. more in circumference than the right. Roentgenogram of the left leg showed a faint line of periosteal elevation on the lateral surface of the middle third of the tibia. There was also an area of increased density in the medullary cavity and irregular areas of rarefaction in the middle of the shaft of the tibia (fig. 7). The patient was admitted to the hospital on May 4 with a diagnosis of possible early bone neoplasm. The roentgenogram was repeated and showed the same changes as described above but somewhat more marked. The roentgenologist's diagnosis was osteomyelitis. Physical examination was essentially negative except for the findings in the left leg. Blood cell count, sedimentation rate, and roentgenogram of the chest were all normal. The child's temperature remained normal. On May 7, a biopsy of the left tibia was done. The periosteum appeared to be thickened and the cortex under it slightly roughened, but no tumor tissue and no pus were found. A smear from the site of the biopsy showed no organisms. The microscopic diagnosis was a "nonspecific fibro-osseous proliferation."

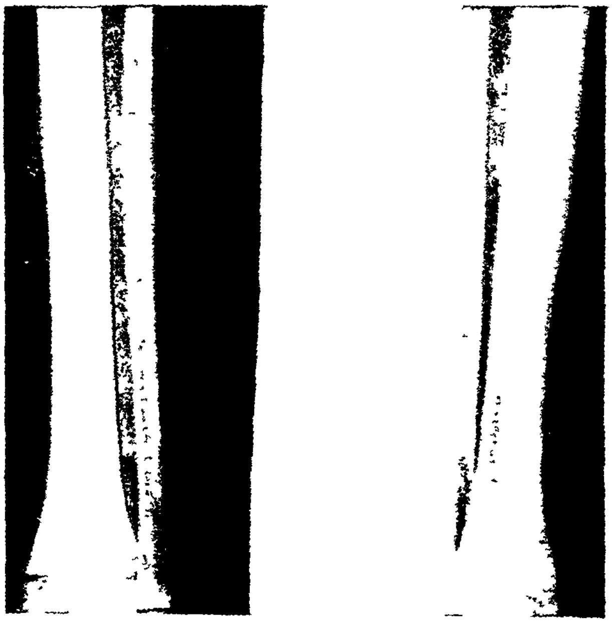

Fig. 7 (case 7).—Faint periosteal line on lateral surface of tibia and increased density in medullary cavity, resembling osteomyelitis or neoplasm.

The postoperative course was uneventful. His temperature remained normal, the pain in the leg subsided within a few days, and the patient was discharged with crutches from the hospital a week after the biopsy was done. He made a complete recovery; within a few weeks all the pain and swelling in his leg had completely subsided. On June 19, roentgenograms showed a very fine periosteal line along the entire shaft of the tibia. On Aug. 1, the roentgenogram was entirely normal except for the small defect where the biopsy had been taken. The periostitis had completely disappeared.

Comment.—In this patient the periostitis was not marked, apparently because the child was older and the periosteum more adherent and less proliferative than in infants and younger children. The clinical picture, with the roentgenographic findings of periostitis, sclerosis, and rarefaction, resembled osteomyelitis and even an early bone neoplasm. It was not until after the microscopic sections showed merely periosteal new bone formation and the subsequent benign course of the condition was seen that a definite diagnosis of traumatic periostitis was made in this case.

The following two cases are presented to illustrate the resemblance between the roentgen manifestations of traumatic periostitis and other conditions.

Case 8.—A 3-month-old female infant was admitted to the hospital on July 17, 1956, with a swelling of the left forearm and fever of 10 days' duration. Physical examination revealed a well-developed and well-nourished infant with marked irritability and a temperature of 100 F (37.7 C). The examination was essentially negative except for that of the left forearm, which showed tenderness, swelling, and induration from the elbow to the wrist. Manipulation of this extremity seemed to be painful. The white blood cell count was 25,000 per cubic millimeter, with polymorphonuclear cells 61%. The serum alkaline phosphatase level was 39.9 units per 100 cc. The roentgenogram of the left forearm showed marked proliferation of the periosteum of the entire radius and ulna (fig. 8). A diagnosis of acute osteomyelitis was first considered but then ruled out because of the involvement of both the radius and the ulna. Roentgenogram of the chest and a skeletal survey showed only changes in the left forearm.

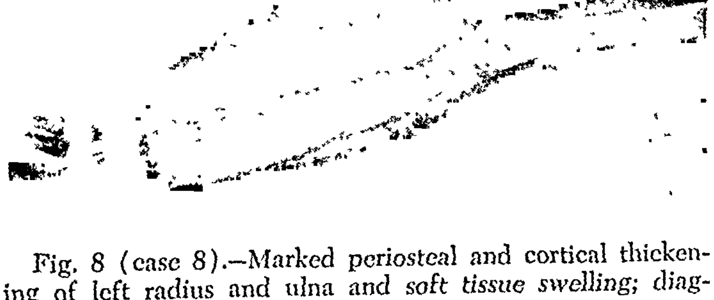

Fig. 8 (case 8).—Marked periosteal and cortical thickening of left radius and ulna and soft tissue swelling; diagnosis, congenital cortical hyperostosis.

In spite of antibiotic therapy the infant continued to run a fever of 100 to 101 F (37.7 to 38.3 C) during her entire hospital stay. The forearm remained swollen and indurated but became less tender. On Aug. 2, almost four weeks after the onset of her illness, a swelling of the left side of the face was noted but roentgenograms of the face showed negative findings. The final diagnosis was congenital cortical hyperostosis (Caffey's syndrome).

Comment.—Roentgenographically, this case bears a strong resemblance to traumatic periostitis. The protracted clinical course, persistent fever, elevated white blood cell count, and elevated alkaline phosphatase level are more consistent with the diagnosis of congenital cortical hyperostosis.[4] The diagnosis was finally established by the appearance of the facial swelling.

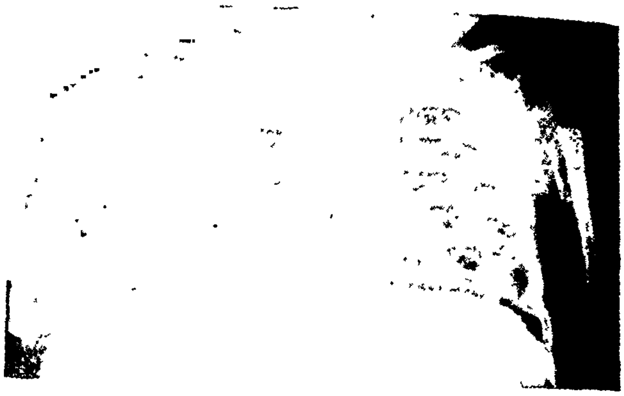

Fig. 9 (case 9).—Calcification of subperiosteal hemorrhage of both humeri; diagnosis, scurvy (note resemblance to figure 5).

Case 9.—A 9-month-old female infant was admitted to the hospital on March 25, 1952, because of a painful swelling of the right shoulder, fever, and irritability. A roentgenogram was taken of the right shoulder and reported by the roentgenologist as showing a fracture through the upper humeral epiphysis. During the first week of hospitalization the child was irritable and apparently unable to move the right arm. A blood cell count showed erythrocytes, 3.8 million per cubic millimeter; hemoglobin, 62%; and leukocytes, 12 900 per cubic millimeter, with lymphocytes, 87%. The urine showed occult blood on repeated examination. Spinal puncture revealed normal findings. The child was given antibiotics, and the fever gradually subsided. However, a week after admission the child was still irritable and screamed when handled, and the shoulder was still quite tender and somewhat swollen. Roentgenograms then showed separation of the capital epiphysis of the right humerus and a faint periostitis at the metaphysis in both shoulders. A skeletal survey a few days later showed irregularity and flaring of the epiphysial lines, rarefaction of the distal femoral metaphysis, and "ringing" of the femoral and tibial epiphysis at the knees. A diagnosis of scurvy was made and the patient was given large doses of vitamin C. The child's condition rapidly improved, and within a few days the irritability and the tenderness over the extremities disappeared. Subsequent roentgenograms showed increased calcification of the periosteal new bone in both humeri (fig 9). Examination a few weeks later showed that the child had made a full recovery and had regained full range of motion in the right shoulder with no swelling and no tenderness. Final roentgenogram examination on Aug 2 1952, showed healing of the bone lesions in both upper and lower extremities.

Comment.—The last case is that of a very young infant in whom the clinical picture could well resemble traumatic periostitis. The roentgenogram, however, readily established the diagnosis.

Case 10.—A 3-week-old male infant was brought to the office on Feb. 21, 1949, with the complaint of not being able to move the left arm. The mother stated that the delivery was rather easy and that she left the hospital

24 hours after the birth of the child. When the baby was 10 days old, the mother noticed that he was not moving his left arm at all. She took the baby back to the doctor who delivered it and was told that nothing was wrong with the child. Examination revealed a fairly well-nourished infant. The upper left extremity hung limply at the side with the arm in internal rotation and the wrist in marked flexion. A diagnosis of birth paralysis was made, and the mother was advised that the child would need an abduction splint to support the left arm.

On March 18, the mother brought the baby back with the complaint that the child was now holding the right arm in the same position as the left. She also stated that the baby had become very irritable and cried excessively on being handled. Examination showed that the baby seemed to have pain whenever the arms were moved and that the right arm also was now held in internal rotation, with pronation and volar flexion of the wrist. There also seemed to be some enlargement of the elbows and wrists. Roentgenograms of both upper extremities revealed irregular "moth-eaten" areas of rarefaction in the metaphysis of the humerus, radius, and ulna, and at both elbows and wrists, as well as periostitis along the shafts of the radius and ulna. Similar changes were noted in the roentgenograms of the lower extremities. A diagnosis of congenital syphilitic osteochondritis was made. The patient was admitted to the hospital and improved rapidly after administration of penicillin. It was later learned from the hospital records that the mother had had no prenatal care and that the result of her Wasserman test was 4+ on her admission to the hospital.

Summary

Traumatic periostitis is a condition affecting the long bones of infants and young children. Injury to the periosteum of these children, even a relatively minor injury, may cause periosteal stripping and subperiosteal hemorrhage followed by calcifying periostitis. Since in most cases of traumatic periostitis trauma is not suspected, often forgotten, or even entirely denied by those responsible for the care of the child, the clinical and roentgenographic manifestations of this condition may be rather perplexing to the physician. The clinical picture may be that of a pseudoparalysis of an extremity, resembling poliomyelitis or congenital syphilis. Swelling, localized tenderness, reluctance to move an extremity, and excessive sensitiveness to being handled may suggest scurvy. The roentgenographic manifestations of traumatic periostitis may in themselves prove puzzling to those who are not aware of this condition. A lesion may even be revealed in the roentgenogram at a site in which there are no clinical manifestations. The resemblance between traumatic periostitis and congenital cortical hyperostosis in the roentgenogram is striking, and local swelling, tenderness, and periostitis may be difficult to differentiate from acute osteomyelitis or a bone tumor. Since traumatic periostitis is a relatively benign disease which subsides clinically within a few weeks and rarely leaves residual manifestations even in the roentgenogram, it behooves us to be cognizant of its existence and to differentiate it from skeletal lesions of a more serious nature.

105 E. Jefferson Blvd. (1).

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ECONOMIC ASPECTS OF REHABILITATION.—In a nation of 170 million people, we have a total labor force of between 65 and 70 million. It is estimated that there are at least two million handicapped men and women in our country who have a chronic disease or long-term physical or mental impairment that is a substantial deterrent to their employment and which could be overcome by comprehensive rehabilitation services. This group grows, I am told, at the rate of a quarter-million persons each year.

With proper rehabilitation services, and with the qualities of courage and inspiration that make them truly an exceptional group, a large percentage of these can be enabled to engage in remunerative work. With the help of modern scientific rehabilitation, they can be added to the rolls of constructive, tax-paying, contributing Americans. They can be self-supporting members of the national community, more than repaying through their services the outlay government may make to the public assistance programs. I have been informed, for example, that the earnings of handicapped persons rehabilitated under the State/Federal program in 1955, during the first year after their rehabilitation into satisfactory employment, is estimated at $105.1 million. It will interest a public, which presently is more than usually budget and tax conscious, that these persons will pay more in Federal income taxes in three years than the Federal government spent for basic support of the vocational rehabilitation program in 1955.—G. Kirk, Rehabilitation—Its New Day, Rehabilitation Series 22, Institute for the Crippled and Disabled, New York, 1957.

COMPARATIVE STUDY OF CHLORPROMAZINE AND INSULIN COMA IN THERAPY OF PSYCHOSIS

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and
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The effectiveness of chlorpromazine was compared with that of insulin coma in 60 patients referred for insulin coma therapy. One-half the group, selected on a random basis, received chlorpromazine by mouth for at least three months in doses adjusted so as to fall just short of toxicity in the individual patient; this dosage varied from 300 mg. to 2,000 mg. daily, with a median of 800 mg. The insulin coma was induced by a standard technique 50 times in each patient. Although many minor differences were noted in comparing the effects of these two methods of treatment, the ultimate results at the time of discharge were essentially the same for the two groups of patients. Neither treatment affected the basic schizophrenic process, but chlorpromazine had the advantage of being safer, easier to administer, and better suited to long-term management.

With the advent of "newer" drugs for the treatment of psychiatric illnesses and the concomitant awareness that the effectiveness of insulin coma therapy was limited, a control drug therapy–insulin coma study was undertaken. Preliminary trials with various medicaments available in 1954 demonstrated chlorpromazine to be potent and relatively safe. Concurrent reports had noted its value in schizophrenic illnesses, and it was therefore selected as the experimental agent.

The study was designed to assess the therapeutic efficacy and indications for intensive chlorpromazine therapy, compared to classic insulin coma therapy, an in open-ward, voluntarily hospitalized psychiatric population.

Subjects and Method

All patients referred for insulin coma therapy during the period Sept. 1, 1955, to Dec. 31, 1956, were observed. Supervising psychiatrists made the recommendation for insulin coma therapy independent of the research group. Their criteria for referral were those implicitly held by the hospital administration and were not altered for this study Randomly selected patients were placed on chlorpromazine therapy instead of insulin coma therapy. This selection was made by the psychiatrist in charge of the insulin therapy unit without prior notice of the referring therapist or the supervising psychiatrist. Sixty patients were referred for insulin coma therapy during the study period, and half of these received chlorpromazine.

Insulin Coma.—The standard technique of Sakel for insulin coma was used. All patients received 50 comas, each of a duration of at least one hour, at the physiological level of Babinski reflex, absent lid reflex, or deeper. Recovery was induced by gavage and occasionally by intravenous administration of glucose. Treatments were given five times weekly for a period of three to four months.

Chlorpromazine.—To establish an equivalent group, chlorpromazine was given for at least three months. Dosages were determined by the research team and were rapidly increased until well-defined physiological effects were observed. These included rigidity, drooling and fixed facies, seizures, or severe dermatitis. In most instances this was achieved below 1,400 mg. daily, although dosages were increased to 3,600 mg. in one patient. In each instance, the drug dosage was slowly reduced until a maintenance dose, just under that producing toxicity, was obtained. This varied from 300 mg. to 2,000 mg. daily with a median of 800 mg.

To determine the comparability of the subjects in the random sampling procedures used in this study, the groups were compared as to their psychiatric diagnoses and ages. Table 1 shows a comparison of the groups as to diagnoses and demonstrates an equal distribution of subjects in each category. In the analysis of the age distribution, the median age for patients subjected to insulin coma was 24 years, with a range of 17 to 38; the median age for patients receiving chlorpromazine was 28, with a range of 19 to 42. Here, too, the distribution shows no significant difference.

For both treatment groups, behavioral observations were made by the research staff at weekly intervals. After completion of the treatment period, reports of the patients' behavior were obtained from the therapist and supervising psychiatrist. The "improvement" rating was determined by the medical director at the patient's discharge conference and was based on the fourfold scale of recovered, much improved, improved, and unimproved. Neither the authors nor the supervisor of the insulin therapy unit participated in these evaluations.

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Observations

Clinical Observations.—The following clinical effects were noted in patients who received chlorpromazine and in those subjected to insulin coma therapy.

Chlorpromazine: Chlorpromazine induced motor retardation in all subjects. Overactive, destructive behavior rapidly disappeared, and patients became more tractable, less negativistic, and less violent. The nurses' and therapists' records noted patients as "less easily excited and frightened," "cooperating better in ward activities," and "less restless and less panic-ridden." One-third of the patients were more sociable and less seclusive and were noted to care for themselves in a more presentable fashion. In instances where severe motor symptoms supervened, however, the patients were less able to care for themselves; they became sloppy and failed to dress themselves. Such periods were usually short and could be significantly modified either by a reduction in drug dosage or by anti-Parkinsonism drugs.

TABLE 1.—*Psychiatric Diagnoses*

	Insulin Coma	Chlorpromazine
Psychoneurosis	1	2
Schizophrenia, paranoid	10	10
Schizophrenia, catatonic	7	7
Schizophrenia, mixed	8	6
Schizophrenia, hebephrenic	3	2
Manic depressive psychosis	1	3

Affective changes during chlorpromazine treatment were varied. Four patients became increasingly agitated, tense, and tremulous and either refused to continue on the drug regimen or were induced to do so only with difficulty. Such an affective "storm" appeared early in the treatment and persisted. In four other patients, depressive symptoms were relieved with an increase in affective lability and responsivity. Depressive ideation increased, associated with complaints of insomnia and anorexia in two patients. The medication was continued, however, with an eventual alleviation. In most patients, mood changes were small.

Ideation was dramatically altered during the period of chlorpromazine therapy in 12 patients. Eight had a loss or a significant diminution of their psychotic ideation. In five, hallucinatory and referential experiences were no longer reported even on inquiry, and, in three others, delusional ideas were less prominent. In one patient, phobias were relieved and the patient could once again participate in ward activities. In another, hypochondriasis was sufficiently modified to permit a more meaningful relationship between therapist and patient. In one patient, paranoid ideation became more prominent. This was associated with increasing anxiety and panic during drug administration and resulted in discontinuation of the drug regimen.

Insulin Coma: The clinical observations in this group were similar to those reported by others.[1] Alteration in behavior was prominent in all patients once repeated comas were induced. Overactive, hostile behavior rapidly diminished and was replaced by alternating periods of somnolence, irritability, and withdrawal. In most patients, nausea, abdominal distress, belching, sweating, and lassitude were common sequelae each afternoon and assumed prominence in the recorded reports. These symptoms often interfered with the patients' ability to care for themselves, and they became unkempt in their dress.

Changes in ideation appeared slowly during the course of therapy. In eight patients, paranoid and delusional thoughts became less prominent, disappearing in these on direct inquiry. Suicidal and outwardly directed destructive thoughts were modified in three patients, only to recur in each at the end of the treatment period.

Mood changes were small. Increasing agitation, tension, and panic were reported in three patients, leading in two to a refusal of further therapy. In one depressed patient, relief of depressive symptoms was noted early in the treatment and was sustained.

In the usual practice of the treatment unit, concurrent electroconvulsive therapy was instituted when behavioral control by insulin coma alone was limited. In six patients, such combined treatment was instituted primarily because of a continuation of overactive or delusional ideation. There was, in four instances, a well defined alteration in behavior, but this was unsustained. None of these patients was rated as improved on discharge.

Discharge Evaluation.—All patients were discharged from the hospital within four months of the end of treatment. Table 2 lists the hospital discharge evaluations for patients treated with chlorpromazine and insulin coma.

TABLE 2.—*Discharge Ratings in Patients Treated with Chlorpromazine and Insulin Coma*

	Treatment	
	Chlorpromazine	Insulin Coma
Recovered, no.	2	0
Much improved, no.	4	5
Improved, no.	17	15
Unimproved, no.	7	10

Included in the group of patients treated with chlorpromazine who were rated as unimproved were four who received inadequate course of therapy (less than one month) because of complications of the therapy. Of the 10 patients treated with insulin coma who were rated as unimproved, four had inadequate courses of therapy, two because of complications (seizures and prolonged coma), one because she became more disturbed, and one because of administrative transfer to another facility.

It is apparent that there *is no difference in the* clinical evaluation at the time of discharge between the group receiving insulin coma and that receiving chlorpromazine. To determine whether this sample was biased because of its small number, we compared these discharge ratings with a similar group treated in this hospital in 1950 and previously reported.[2] In table 3, the discharge ratings for both years are compared. The percentage improvement rates for each category are not significantly different.

TABLE 3.—*Discharge Ratings Compared for 1950 and 1956*

	Present Group (30 Subjects)	1950 Group (48 Subjects)
Recovered, %	0	14
Much Improved, %	17	19
Improved, %	50	42
Unimproved, %	33	25

Toxicity and Complications.—Patients receiving chlorpromazine and those subjected to insulin coma therapy were compared as to toxic reactions and complications, with the following effects noted.

Chlorpromazine: Inherent in the design of this study were high doses of chlorpromazine, pushed to a level producing symptoms of toxicity. In this context, all patients developed significant drug effects. Rigidity of extremities, accompanied by a decrease in facial expression, drooling, and festination, was frequently observed. In three instances, rigidity appeared as drug dosage was reduced. Most patients became drowsy, retarded, and less active in ward activities. In four patients increased tension, agitation, restlessness, and excitement supervened, leading to a discontinuation of the drug regimen in two.

Seizures occurred spontaneously in three patients. Pretreatment electroencephalograms had manifested no dysrhythmia, and no history of seizures had been elicited. In each, the drug medication was reduced, and seizures did not develop at the lower dosages.

Dermatitis was a frequent complication. All patients developed a transient erythema to mild solar radiation. Severe intractable skin reactions occurred in three patients, with resultant discontinuation of drug therapy in two. In the third, promazine hydrochloride therapy was substituted for chlorpromazine, with a relief of the dermatitis. The behavioral effect of the promazine was indistinguishable in this patient from that noted in patients receiving chlorpromazine.

In this group, no patient developed clinical jaundice. This complication has been variously reported as occurring in less than 0.5% of subjects treated. In the preliminary studies at Hillside Hospital, 3 patients of a group of 20 developed transient clinical jaundice.

Electroencephalograms were obtained in 20 of the patients who received chlorpromazine. With increasing doses, the modulation of the record became more irregular in each. A moderate amount of low-voltage 4-7 cps delta and theta activity was induced, and this activity was exaggerated by hyperventilation. There was a suggestive relationship between the degree of the induced slow-wave activity and the drug dosage.

Insulin Coma: The complications of insulin coma therapy in this series were not unusual. Insulin resistance was noted only once and was eventually overcome by the method of alternating dosages. Prolonged reactions occurred in three patients. In each, neurological examination and electroencephalography demonstrated signs of persistent central nervous system dysfunction for at least 10 days. Aphasia, hemiparesis, and paresthesias were frequent in five patients and transient in eight others. Seizures occurred in five patients and were recurrent in three. Frequent secondary reactions, nausea, vomiting, abdominal distress, sweating, pallor, lassitude, and generalized weakness occurred in all patients with varying frequencies.

The complications of both forms of treatment are listed in table 4. Certain effects, such as dermatitis and hypotension, secondary reactions, and prolonged coma are individual for each therapy, and seizures, agitation, and refusal of therapy were noted with both regimens. The frequencies of these are not significantly different.

Effects on Psychotherapeutic Relationship.—Patients were referred for insulin coma therapy after a period of verbal relationship therapy. Such referral implies a failure of interpersonal communication.

TABLE 4.—*Complications of Treatment with Chlorpromazine and Insulin Coma*

	Treatment	
	Chlorpromazine	Insulin Coma
Agitation and panic	4	3
Dermatitis, severe	3	...
Seizures	3	5
Refusal of further therapy	2	2
Hypotension	2	...
Secondary reaction, frequent	...	5
Prolonged coma (>6 hr.)	...	3
Insulin resistance	...	1

Chlorpromazine: During the period of effective drug action, 15 of the patients treated with chlorpromazine were described by the therapist in response to an inquiry as "more accessible," "speaking more freely," and "more amenable to psychotherapy." The behavioral changes could be classified in two groups: subjects in whom tension and preoccupation with somatic symptoms became much less, and those in whom hallucinatory or delusional preoccupations ended. Such changes in relationship were frequently described as an increase in "contact." In 13 subjects, psychotherapy either was still "not feasible" or had become less feasible because of increasing uncontrolled tension, anxiety, or preoccupation with the side-effects of the drug regimen.

Insulin Coma: Similar observations were made in the patients treated with insulin. Of the 30 patients, 7 were noted to be less tense and less anxious during therapeutic sessions. The therapists noted that the patient "verbalized more freely" and "was more aware of his environment." Four patients were specifically treated with a "modified anaclitic" approach. In each instance, this relationship was unsustained during treatment and the therapists resorted to more conventional tactics. In the remaining patients (19), while supportive, educational, and environmental manipulating techniques were applied, the therapists were no more successful than prior to insulin therapy. In 11 patients, the physiological effects of the treatments (secondary reactions, sweating, nausea, vomiting, and weight gain) were reported as interfering with psychotherapeutic attempts.

Comment

Clinical Considerations.—In these patients, neither chlorpromazine in high therapeutic doses nor insulin coma specifically modified the psychotic process. Since 88% of these patients had a diagnosis of schizophrenic illnesses, we concluded that neither treatment has a specificity in altering the schizophrenic process. When given in adequate dosage, however, both treatments are potent methods for the alteration of behavior. In the discharge evaluations, the treatments are similar. In only 20% of the patients were induced behavioral patterns persistent, with the rating "much improved" or "recovered." For the others, the induced behavioral changes were transient or minimal.

Since these therapies fail to induce a recovery from the psychotic process, consideration should be given to their ameliorative, palliative, and supportive aspects. Symptomatic relief was frequent but generally limited to the treatment period. Patients were made uncomfortable by both therapies, however, and the complications and toxic effects have already been noted.

In assessing the role of concomitant psychotherapy, there is little advantage in either therapy. Both methods were said to enhance relationship therapy, although the therapists' evaluations favored chlorpromazine therapy. Excluding those who developed increased agitation, patients were more comfortable, more alert, and physically better able to discuss their feelings and experiences while on chlorpromazine treatment. It is clear that "interpretive" psychotherapy is not enhanced; rather, supportive, educative, reorienting, and directive types of therapy are. When there is a modification of agitated, hallucinatory, depressed, manic, or aggressive behavior, both the therapist and the patient are more comfortable and better able to discuss the reality aspects of the life situation.

Therefore, in this context, the ease of administration and the possibility of continued maintenance of chlorpromazine in an outpatient setting assume decisive significance. To maintain such therapy after discharge and continue thereby the relationship established in the hospital setting may be an important element in sustaining the behavioral changes induced by hospitalization.

Other Studies.—While many reports of the treatment of psychosis by chlorpromazine have appeared, we are aware of only one similar comparative study. Boardman, Lomas, and Markowe,[3] after a review of the problem, reported a study of 100 patients randomly divided into two groups of 50 and treated with either insulin coma or chlorpromazine. The chlorpromazine dosage was lower than that used in the present series (average 300 mg.), but the drug period (three months) was the same. Their observations are directly comparable to this study. They reported no difference either in discharge evaluations or in symptom assessments for either treatment group.

The patients treated with chlorpromazine, however, remained in the hospital an average of 6.2 weeks less than the subjects treated with insulin. This was a significant difference between the groups. They concluded, "There is inconclusive evidence that chlorpromazine has advantages over insulin in the treatment of schizophrenia [but] insulin has disadvantages in the form of greater danger and more unpleasantness for the patients and greater strain on the nurses. Chlorpromazine is the first treatment of choice in schizophrenia, but this conclusion is based on the immediate results of treatment and has not yet been confirmed by an adequate follow-up study."

Boardman and his co-workers emphasize the problem of evaluating the therapeutic efficacy of insulin coma. They note a number of reports that raise doubts as to the efficacy of insulin coma therapy in schizophrenia. Bourne,[4] in an extensive review of the merits of insulin therapy in schizophrenia, concluded, "There is no proof of any specific therapeutic effect, and the long term prognosis is in no way influenced."

The recent observations of insulin treatment of schizophrenia by Ackner, Harris, and Oldham [5] are relevant. In a carefully controlled study, young schizophrenic patients were randomly treated either by insulin or by barbiturate coma in the same ward and under similar conditions. Evaluations of results were made by psychiatrists without knowledge of which treatment the patients received. The authors noted a similar outcome, whether the loss of consciousness was induced by a barbiturate or by insulin, and concluded that *insulin was not a* specific therapeutic agent in the outcome.

In the follow-up studies done in this hospital,[2] the therapeutic results of insulin coma therapy were disappointing. Patients referred for insulin coma had the longest period of hospitalization (6.5 months, as against 6.04 with psychotherapy and 4.95 with electroshock), the poorest discharge rating (33% recovered and much improved as against 63% with psychotherapy and 67% with electroshock), and, within four years, a 50% rehospitalization rate (compared to 33% with psychotherapy and 29% with electroshock). While these observations reflect the idea that the more severely ill patients are referred for insulin coma, they also support the belief that insulin coma is not a specific treatment for the patients referred.

From these reports we would conclude that, *despite considerable study* and the passage of many years, insulin coma therapy has not been shown to *induce persistent behavioral changes more frequently* than other nonspecific, less dangerous, and less expensive therapies. To the list of alternate therapies of limited value in the management of psychosis we may now add chlorpromazine, noting, however, its advantage of lesser risk and ease of administration.

Dosage of Chlorpromazine.—For the purpose of assuring an adequate level of chlorpromazine dosage for evaluation, the amount of medicament given was increased in all subjects to toxic levels. This level was too high for its behavioral effects, as evidenced by the reduction in all responsive cases to maintenance levels of 300 to 2,000 mg.

It is our impression that chlorpromazine affects the function of the central nervous system (as evidenced by changes in modulation and per cent time delta in the electroencephalogram and the systemic phenomena of *rigidity* and *lassitude*) and results in a nonspecific alteration in behavior.[6A] Such behavioral change is varied and is dependent on a variety of factors, of which the personality organization and the expectancy of the milieu are significant. In this context, the induction of a state of altered cerebral function is a necessary prerequisite to behavioral change. The only assurance of achieving a therapeutic level, therefore, is the appearance of toxicity and a lowering of dosage from that level to a maintenance dose. The effects of rigidity, drowsiness, and lassitude, therefore, are necessary concomitants of the therapy and should be induced in all patients in whom a therapeutic effect is desired. In instances where an affective "storm" supervenes, continuation of therapy at higher levels, with concomitant administration of trihexyphenidyl hydrochloride (Artane) and benztropine (Cogentin) methanesulfonate should be considered. Such an attitude in therapy is comparable to the application of digitalis in cardiology and to the present concept of the mode of action of electroshock therapy.[6]

Summary

In a study of patients referred for insulin coma therapy in an open-ward, voluntary psychiatric hospital, patients received randomly either insulin coma therapy or intensive chlorpromazine therapy. Chlorpromazine was found to be as effective in modifying psychotic behavior as insulin coma therapy. There was no difference in the improvement rating on discharge, incidence of complications, or effects on the psychotherapeutic relationship for either therapy.

In comparison to insulin coma, chlorpromazine is safer, easier to administer, and lends itself to long-term management. Patients receiving chlorpromazine therapy are more comfortable than those receiving insulin coma. No evidence has been educed that either therapy has altered the basic schizophrenic process, nor is there any evidence that there is greater specificity of either form of therapy for schizophrenic illnesses.

75-59 263rd St. (Dr. Fink).

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The chlorpromazine used in this study was supplied as Thorazine by Smith, Kline & French Laboratories, Philadelphia.

The promazine hydrochloride used in this study was supplied as Sparine by Wyeth, Inc., Philadelphia.

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TUBERCULOSIS IN KOREA—A CONTROL PROJECT

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A program sponsored by Church World Service was developed to aid the Korean people in efforts to control tuberculosis. It included plans for chest clinics, free diagnostic and therapeutic x-rays, sanatorium beds, education of professional personnel and the public, and visits of especially trained nurses to patients' homes. The disease was found to be far advanced in 34% of the first 1,000 patients on their first visit to the clinic. The record of the first 1,000 home visits showed that there were 650 families that had only one room. Of the 163 families occupying a single room each, 23 consisted of from 6 to 10 persons. The treatment usually prescribed was the daily oral administration of isoniazid (3 to 5 mg. per kilogram of body weight) and p-aminosalicylic acid (10 to 12 Gm.). In addition substantial help with food and housing was necessary. It was estimated that 5% of the patients became worse during treatment, but in 59% of an unselected series of 162 patients cultures of sputum no longer yielded tubercle bacilli after six months of treatment (67% after one year). This pilot project showed that the treatment of tuberculosis by the foregoing methods, especially if accompanied by relief measures, is successful with the majority of sufferers from this disease.

It is well known that countries in the Far East have a very high incidence of tuberculosis, but in none of the large countries are methods of diagnosis for the general population of sufficient accuracy to determine the number of active cases nor the death rate. The estimate, therefore, of an annual death rate of 400 per 100,000 of the population in Korea is only a guess. This may be compared to 8.3 per 100,000 for the United States, 7.8 for Canada, or 12.1 for England and Wales. As a result of recent surveys on a small scale, the incidence of active pulmonary tuberculosis appears to be from 2 to 2.6% of the population, although the rate is probably a little lower in country districts.

Since South Korea has a population of over 20 million, there are probably 400,000 who require treatment. Existing beds in sanatoriums and beds available in general hospitals can provide accommodation for only 4,000 patients. In the United States, for an equal number of patients with active disease in a population of 172 million people, there are 125,000 beds in sanatoriums. Health surveys made some years ago for the World Health Organization, the U. S. Army, and the Economic Cooperation Administration, all stated that the most serious disease in Korea is tuberculosis. At that time there were no chest clinics and only 1,000 beds available in sanatoriums.

Initiation of Program

Owing to the concern which mission boards in the United States felt regarding the need of the Korean people for help in the control of this disease, I was asked to initiate a program sponsored by Church World Service, which represents the social service work of over 20 protestant denominations. A budget of $50,000 was recommended. The plan of attack was based upon methods that have proved successful in the West, namely (1) the provision of chest clinics easily available to the public; (2) free x-rays and free treatment; (3) the provision of sanatorium beds, especially to provide facilities for lung surgery; (4) the education of doctors, nurses, and the public; and (5) visits to the homes of patients by graduate nurses specially trained in tuberculosis control.

In January, 1954, a chest clinic was begun in Seoul at Severance Union Medical College Hospital. The aim was to provide a free clinic service with home visiting by graduate nurses as an essential part of the program. In the beginning it was difficult to get nurses to undertake the visiting of patients with tuberculosis, as this was a new type of work.

In the first month there were only 7 patients, but, as these patients told others, in six months the attendance had risen to over 50 a day. This rapid increase in numbers was due to the provision of free x-rays and free treatment for all poor patients. Previously few of these patients could afford to attend a hospital or pay for the x-ray examination or drugs. Poor families were also supplied with clothing and food. This added, no doubt, to the popularity of the clinic, for at the end of 1956, 822 patients were in regular attendance; the average number of daily visits was over 100, and on some days over 180 attended the clinic.

Other clinics were opened in Seoul, and the staff was gradually increased to cope with the increased amount of work. These were at the Red Cross Hospital (begun in August, 1954), Seoul Women's

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Medical College Hospital (begun in November, 1954, and continued for one year), City Hospital (May, 1955), Sun Hwa (November, 1956), and Yung Dong Po (February, 1957). With the exception of Severance, which is a private hospital assisted by American, Australian, and Canadian missionary societies, and the Red Cross hospital, the other clinics have been set up in government charity hospitals. The government has generously provided quarters and supplied a large portion of the drugs and x-ray films.

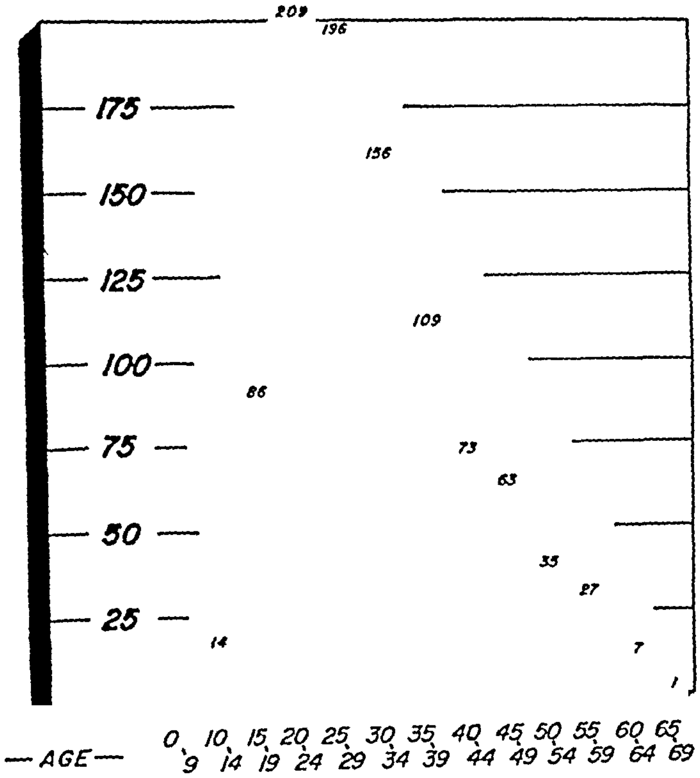

Fig. 1.—Age distribution of 976 adult patients.

When the first clinic was started, there were no male doctors available, as all men on graduation are assigned to the Army, Navy, or Air Force. It was therefore necessary to find and train women graduates. Our staff in Seoul now consists of five women doctors and five men, three of whom have recently returned from postgraduate experience in the United States. The program remains essentially a training program. Twelve nurses are employed in Seoul for home visiting and the work of the clinics.

Beginning in November, 1954, clinics were begun at Sapkyo, Taegu (population about 170,000), Taejon (100,000), and Chongju (52,000). Assistance was given to clinics at Inchon (215,000), Kwangju (100,000), Mokpo (103,000), and Yongin. Clinics at Inchon, Taejon, Kwangju, and Mokpo were associated with mission hospitals; the Taegu clinic was in a government medical college hospital. The Yongin clinic was a village community project. In the village of Sapkyo the clinic was organized, staffed, and completely supported by Korea Church World Service. The staff in Sapkyo consisted of one American nurse, two Korean nurses, and for a time a Korean doctor. The work of the clinic was supervised by Dr. Burgess from the central clinic in Seoul. In two and one-half years 399 patients were under regular treatment. Patients came from a distance of 50 miles, and, although an attempt was made to restrict the service to the district for which it was intended, this was found difficult.

Findings and Procedures

Incidence.—From the study of 1,000 adult patients, it appears that men and women are probably equally affected, although more men than women attend all clinics. Most of those affected are between the ages of 15 and 40 years, with the peak at 25 years (fig. 1). Children at Severance were treated in the pediatric department and so could not be included in this analysis.

Classification.—The disease in the first 1,000 patients on their first visit to the clinic was minimal in 22%, moderately advanced in 44%, and far advanced in 34%.

Overcrowding.—The degree of overcrowding must be seen to be appreciated. An analysis of the home-visiting records for the first 1,000 homes (in which there were one or more persons with pulmonary tuberculosis) visited showed that there were 650 families (65%) that had only one room per family. For 163 families this room was 6 ft. square, and 23 of these families had from 6 to 10 individuals in each family. There were 221 families with two rooms, 96 with three, 24 with four, and 9 (less than 1%) with five or more rooms. Figure 2 shows the number of rooms per family, and figure 3 shows the area of living space per family.

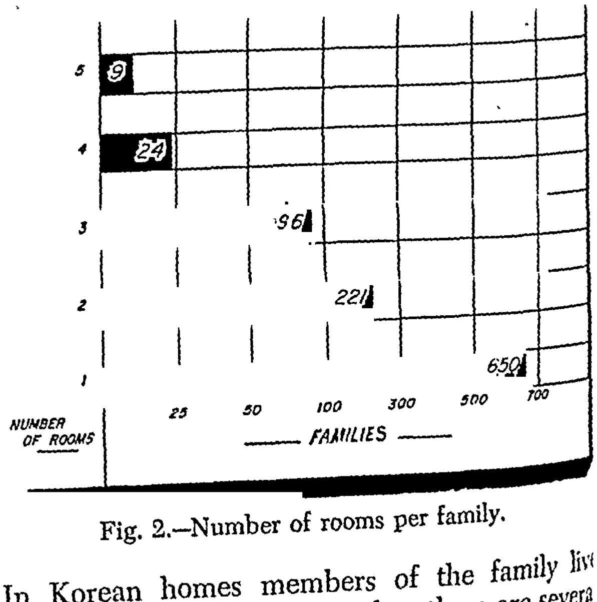

Fig. 2.—Number of rooms per family.

In Korean homes members of the family live and sleep on the floor. Even when there are several rooms in a house, the family during the winter will crowd into the room which has a warm floor. To provide heat for the home, the kitchen is placed outside and at a lower level than the house itself. It is then possible for the flue from the kitchen to pass under the bedroom. In only a few homes is isolation of the patient possible.

Family Income.—Family income in 1,000 families varied from nothing to over $53 a month (fig. 4). There were 72 families whose income was not over $6 a month, and if illness affected the wage-earner this dropped to zero. Twenty-five families had an income of not over $12, 63 not over $18, and 133 not over $23. Thus there were at least 293 families of 1,000 who were living at semistarvation level. Over half (51%) had an income not exceeding $33 a month. No data are available as to what proportion of the families in the city who do not have a patient to care for exist at this level.

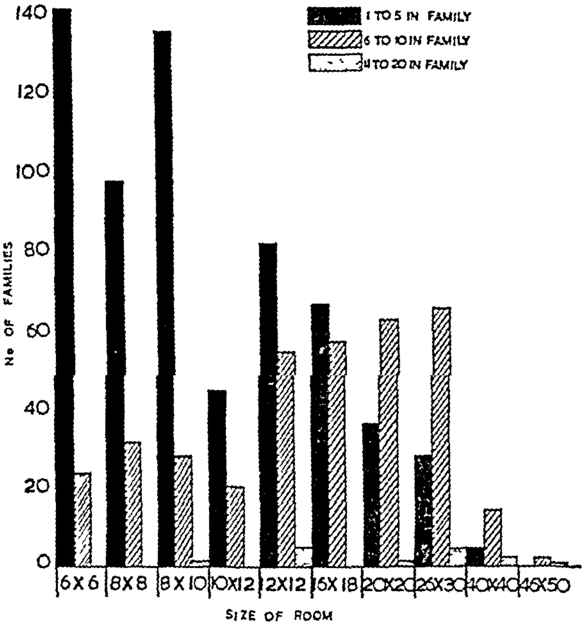

Fig. 3.—Area of living space per family.

Education.—A booklet, "Instructions for Patients," has been prepared in Korean and a copy given to each patient, most of whom are able to read Korean phonetic script. A series of talks and dialogues has been broadcast from two radio stations, and articles have been supplied to the newspapers by members of the staff.

Home Visiting.—Home visiting is an essential part of the program, since few families know the infectious nature of the disease. Also, patients who are visited in their homes follow instructions better than those not visited. Each nurse works under the supervision of a clinic doctor and instructs the family regarding methods of transmission, the importance of complete rest when this has been ordered (about half follow instructions), and the value of good food, fresh air, and sunlight. Contacts are urged to come to the hospital for a free chest x-ray. The nurse also records the condition of the home, the number and size of the rooms, the economic status of the family, and whether clothing, food, or cash are most needed. Weekly conferences are held on problems disclosed in these visits. In Seoul, 2,747 homes were visited and 6,147 return visits made. There were 4,199 homes visited and 13,934 return visits at all clinics, including those outside Seoul.

Relief.—About 10 tons of food supplies were issued each year to patients. The bulk of these supplies was from Korea Church World Service, the Mennonite Central Committee, and United States and Canadian Army chaplains. Seventy families were given small cash grants at various times, and 12 destitute patients were given the equivalent of $8 a month for over a year. The United Church of Canada supplied $3,000 for this relief. Much more could have been done had larger sums been available. In 1904, in Edinburgh, Sir Robert Philip stated his belief that in the solution of the tuberculosis problem a plan of supervised relief must play a chief part.

Shelters.—Prefabricated wood shelters have been designed for patients whose disease remains infectious after prolonged treatment and who are unsuitable for lung surgery. A number of these have been loaned to families and erected close to the homes.

Eighth Army Memorial Chest Hospital.—As part of the project for the training of doctors, students, and nurses and especially to provide facilities for chest surgery, a hospital of 140 beds is under construction in Seoul. Materials for the building and its equipment have been supplied by the U. S. Eighth Army. When finished the hospital will be administered as part of Severance Hospital.

Treatment and Results

Treatment.—The treatment usually prescribed is the daily oral administration of isoniazid (nicotinic acid hydrazide), 3 to 5 mg. per kilogram of body weight, and 10 to 12 Gm. of PAS (*p*-aminosalicylic acid). Streptomycin, 1 Gm. injected twice a week, may be added or may replace isoniazid. Usually either isoniazid or streptomycin is used, not both, especially in patients who might sometime become candidates for thoracic surgery. Our impression is

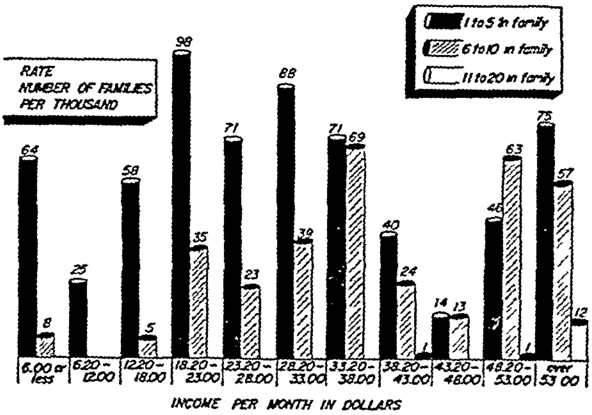

Fig. 4.—Income in families where member has pulmonary tuberculosis.

that isoniazid gives slightly better results than streptomycin. An analysis of the results in a large series is in preparation.

About 1.5% of those attending the clinics showed x-ray changes which were proved to be due to paragonimiasis. Paragonimus westermani eggs were found in the sputum. Approximately 25% of those who attended the clinic for an x-ray examination showed radiologic signs consistent with a diagnosis of active pulmonary tuberculosis. At the end of 1956, 1,500 patients were under treatment in Seoul and 2,500 additional patients in other centers. A summary of data is given in table 1.

Results

Results in an unselected series of 162 patients showed that, after three months' treatment, in 32% of the cases the sputum showed no evidence of tubercle bacilli on culture; after six months the percentage was 59, after nine months months 63, and after one year 67. Table 2 gives an analysis of results in a small number of patients treated, but the results in the large series are similar.

In Sapkyo, a country village, where many of the patients were farmers who insisted that to keep their families from starvation it was necessary to continue to work their farms, the results were not as good as in clinics where a larger proportion of patients were able to rest; nevertheless, the results were better than was expected.

Dr. John N. Burgess reported the results in 161 patients. The lesions, as assessed by x-ray examination before treatment, were far advanced in 93 patients, moderately advanced in 50, minimal in 77, primary in 6, and miliary in 4. Of the 143 patients with far-advanced and moderately advanced disease, most had had symptoms over six months, and many had had previous treatment.

TABLE 1.—*Summary of Data on Persons with Pulmonary Tuberculosis in 1954, 1955, and 1956*

	Data from Clinics at Seoul								Data from All Clinics	
	1954		1955		1956		Total			
	No.	%	No.	%	No.	%	No.	%	No.	%
Persons x-rayed, no.	4,517	100	6,980	100	6,982	100	18,479	100	27,200	100
Active	1,019	22.8	1,626	23.3	1,831	26.2	4,476	24.2	7,655	28.1
Questionable	42	0.9	115	1.6	102	1.5	259	1.4	695	2.5
Inactive	78	1.7	114	1.6	77	1.1	269	1.4	499	1.8
Suspect	159	3.5	73	1.0	57	0.8	289	1.5	413	1.5
New homes visited	470	...	1,233	...	1,044	...	2,747	...	4,199	...
Return visits to homes	746	...	2,518	...	2,883	...	6,147	...	13,934	...

After treatment, x-ray changes indicated improvement in 65% of these patients; improvement was marked in 64, moderate in 33, and slight in 8 patients. There was no change in 48, or 30%. Deterioration occurred in 8, or 5%.

In this series of 161 patients, 40 had had less than eight months' treatment. It was thought that eventually 80% would show improvement. Only 22%, however, showed a change of positive to negative sputum, although those whose treatment was longer showed 33% conversion. In the same series Dr. Burgess considered that 15% were suitable for lung surgery.

TABLE 2.—*Percentages of One Hundred Sixty-two Patients Showing Various Radiologic Changes After Beginning Treatment*

Type of Change	No. Months After Starting Treatment			
	3	6	9	12
Improvement				
Marked	13	26	34	45
Moderate	9	21	26	16
Slight	37	35	20	21
Total				82
No change	35	16	14	13
Deterioration	6	2	6	5

Comment

A pilot project begun in 1954 and continued for three years has shown that in a country such as Korea the treatment of pulmonary tuberculosis by attendance at clinics and home visits by a nurse, especially if accompanied by relief measures, can be successful with the majority of sufferers from this disease, and, if carried out on a large enough scale, could in a few years materially decrease its incidence. Patients in both city and country come so readily for treatment that it is difficult to cope with the increase in numbers. The patients whose condition deteriorates during treatment make up 5%, not greater than in sanatoriums in the United States. It should be noted that this report concerns only the work supported by Church World Service and does not deal with the excellent program carried on by the government of Korea through clinics in many cities.

Summary

Of those who attended chest clinics for a chest x-ray, approximately 25% showed radiologic changes consistent with a diagnosis of active pulmonary tuberculosis. In 67% of 162 patients whose sputum was positive at the beginning of treatment, sputum culture showed no evidence of tubercle bacilli at the end of one year. Eighty per cent of 162 patients showed radiologic improvement in one year; in 45% this improvement was marked. In a country clinic, in which some of 161 patients had been treated for only 8 months, 65% showed radiologic improvement.

The chief factor in the high incidence of tuberculosis in Korea appears to be the overcrowding, with all members of the family, including the patient with "open" tuberculosis, sleeping in one room, and this room often quite small. Most of the patients attending the clinics were found to be extremely poor. A home visiting program by nurses trained for this work is considered essential for the education of the patient and the family. A relief program for poor patients helps greatly in meeting the needs of the patient.

United Church of Canada, Board of Overseas Missions, 299 Queen St. W., Toronto 2 B.

The help of a loyal Korean staff, the Korean government, the superintendents of hospitals where clinics were established, and the many donors to the Church World Service is hereby acknowledged. The largest single gift was given by Mr. and Mrs. John Hay Whitney.

CLINICAL NOTES

TREATMENT OF ANTICHOLINESTERASE INTOXICATION WITH OXIMES

USE IN NORMAL SUBJECTS AND IN PATIENTS WITH MYASTHENIA GRAVIS

David Grob, M.D.
and
Richard J. Johns, M.D., Baltimore

Intoxication by anticholinesterase compounds may occur in normal subjects after accidental exposure to organophosphorus insecticides (e. g., parathion[1] and tetraethylpyrophosphate [TEPP][2]) and chemical warfare agents (e. g., sarin, one of the "nerve gases," isopropyl methyl phosphonofluoridate[3]). Similar intoxication may occur as a result of overtreatment of patients with myasthenia gravis with anticholinesterase medication, whether organophosphorus (TEPP or octamethyl pyrophosphoramide [OMPA]) or quaternary ammonium (neostigmine [Prostigmin], bis-neostigmine [BC-40], pyridostigmine [Mestinon], bis-pyridostigmine [hexamarium, BC-51], or ambenomium [Mytelase]).[4] These compounds inhibit cholinesterase enzymes throughout the body, resulting in local accumulation of acetylcholine, which produces increased activity of smooth muscle and secretory glands (manifested by nausea, vomiting, diarrhea, sweating, and increased salivary and bronchial secretion), bradycardia, central nervous system symptoms, muscular weakness, and fasciculations in normal subjects,[1] and increased strength which may be followed by weakness in patients with myasthenia gravis.[4a] In the management of the latter disease, graded doses of anticholinesterase compound are administered until a maximal level of strength is attained in the affected muscles. Unfortunately, in patients with severe myasthenia, the maximal strength attained may be far below normal. Increasing doses may result in no further increase in strength, and excessive use may produce generalized weakness which is accompanied by less muscular fasciculation and gastrointestinal symptoms than in normal subjects.

The administration of large doses of atropine ameliorates the gastrointestinal symptoms, sweating, salivation, bradycardia, and central neural effects produced by anticholinesterase compounds, but has no influence on the muscular weakness. In severe anticholinesterase intoxication, death occurs as a result of paralysis of the muscles of respiration and of the pharynx and tongue unless artificial respiration and an open airway are maintained until spontaneous recovery occurs.[1]

Recently, it has been demonstrated that cholinesterase inhibition, neuromuscular block, and lethal effects produced by organophosphorus anticholinesterase compounds in experimental animals may be reversed by a number of oximes.[5] This communication will present evidence that the oximes, pyridine-2-aldoxime (2-PAM) and diacetyl monoxime (DAM), are capable of reversing in man cholinesterase inhibition and neuromuscular block due to organophosphorus or quaternary ammonium anticholinesterase compounds, and are of clinical value in the treatment of intoxication by these compounds in normal subjects and patients with myasthenia gravis.

Procedure

After studies carried out in vitro[6] had demonstrated that 2-PAM and DAM protected against the inhibition of human cholinesterase enzymes by both organophosphorus and quaternary ammonium anticholinesterase compounds, and that 2-PAM reversed this inhibition, the effect of the oximes on alterations in neuromuscular function produced by these anticholinesterase compounds in normal subjects and myasthenic patients was determined. The following anticholinesterase compounds were administered intra-arterially into the brachial artery and orally: neostigmine, bis-neostigmine, pyridostigmine, bis-pyridostigmine, ambenomium, and sarin. Octamethyl pyrophosphoramide was administered orally only. After the development of alterations in neuromuscular function and strength in the

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From the Department of Medicine, Johns Hopkins University and Hospital. Dr. Johns is a Kenny Foundation Scholar injected arm or generally, 2-PAM or DAM was administered intra-arterially or intravenously. Muscle function was determined by percutaneous electric stimulation of the ulnar nerve and by recording the evoked muscle action potentials[7] and tension. Muscle strength was also evaluated by measurement of grip strength, and of the length of time the head or each extended leg could be elevated from the supine position, and the arms from the sitting position. Plasma and red blood cell cholinesterase activity was determined electrometrically[8] on blood drawn from the uninjected extremity.

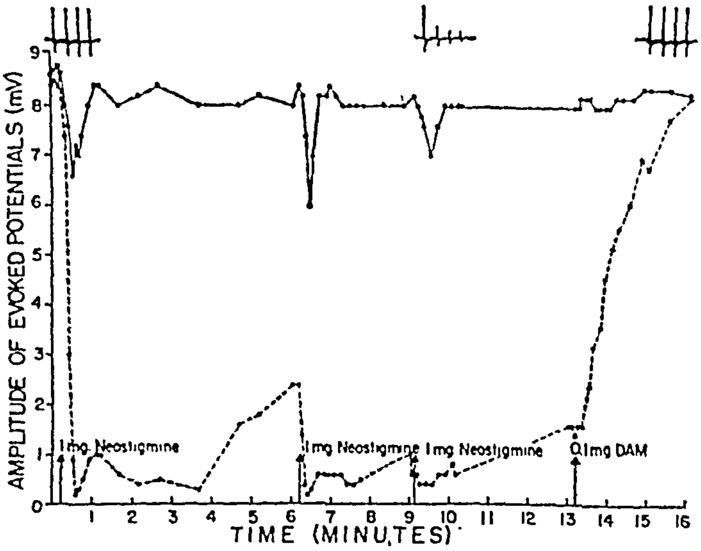

Fig. 1.—Reversal by DAM of depressant effect of neostigmine on evoked muscle action potentials and tension of normal subject. Amplitude of first (solid line) and fourth (broken line) potentials in response to train of four nerve stimuli (40 msec. apart) evoked every five seconds has been plotted, and illustrative potentials recorded above. Injections were intra-arterial.

Results

Normal Subjects.—The intra-arterial injection of 0.05 to 0.1 mg. of 2-PAM or DAM promptly and strikingly reversed in normal subjects the local neuromuscular block produced by each of the anticholinesterase compounds studied (fig. 1). The evoked muscle action potentials and tension, which had been depressed by the anticholinesterase compounds, were restored to their initial amplitude. The prior injection of oxime protected against the neuromuscular blocking action of these compounds.

The intravenous injection of 500 to 2,000 mg. of 2-PAM or DAM over a period of 5 to 10 minutes ameliorated to a moderate degree the generalized weakness produced by the oral or parenteral administration of each of the anticholinesterase compounds studied. Muscular fasciculations were reduced to a lesser degree; occasionally they were unchanged. The improvement began within 30 seconds after injection, and was maximal in 5 to 10 minutes. Approximately 20 minutes later, there was usually some return of weakness and fasciculations but not to the original level. Another injection of oxime then resulted in further improvement. The more severe the weakness, the less striking was the improvement. In no instance was there a dramatic increase in strength comparable to the reversal of neuromuscular block observed locally after the intra-arterial injection of much smaller doses of oxime. Both 2-PAM and DAM were equally effective, and the action of each of the anticholinesterase compounds was reversed to the same degree.

Myasthenic Patients.—Prior to the administration of anticholinesterase medicaments, myasthenic patients had generalized weakness and defective neuromuscular transmission, indicated by progressive decline in the amplitude of successive evoked muscle-action potentials (fig. 2). After the administration of sufficient anticholinesterase compound to improve strength and neuromuscular transmission, the intra-arterial or intravenous injection of 2-PAM or DAM reversed this effect, resulting in return toward the original state of weakness (fig. 2).

After the administration of an excess of anticholinesterase compound sufficient to decrease strength and neuromuscular transmission, the injection of 2-PAM or DAM reversed this effect, resulting in an increase in strength (fig. 3) and in the amplitude of evoked potentials. The doses of oxime that were required and the degree of change were similar to those in normal subjects. However, whereas in normal subjects the further administration of the same doses of oxime after recovery from the effects of the anticholinesterase compound produced no change, in myasthenic patients this resulted in depression of strength and neuromuscular transmission toward the level that had existed prior to the administration of any anticholinesterase compound. As in normal subjects, 2-PAM and DAM were equally effective, and the action of each of the anticholinesterase compounds was influenced to the same degree.[9]

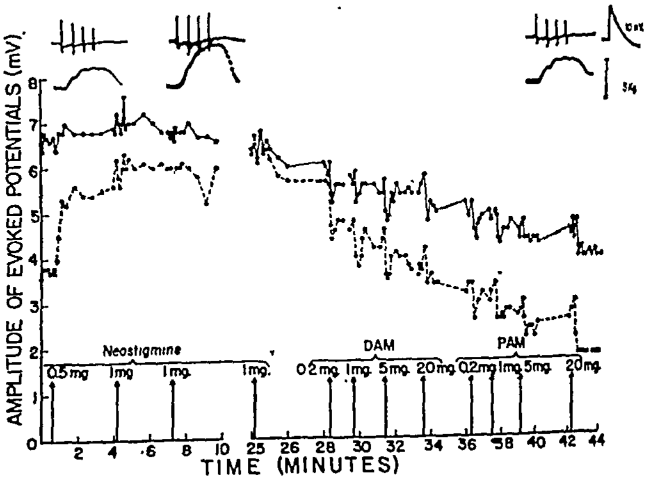

Fig. 2.—Reversal by DAM and 2-PAM of reparative effect of neostigmine on evoked muscle action potentials and tension of myasthenic patient. Amplitude of first (solid line) and fourth (broken line) potentials in response to train of four nerve stimuli (40 msec. apart) evoked every five seconds has been plotted, and illustrative potentials (mV.) and tension (kg.) recorded above. Injections were intra-arterial.

Other Effects of Oximes

The intravenous administration of 100 to 1,000 mg. of 2-PAM or DAM usually produced slight to moderate reversal of plasma and red blood cell cholinesterase inhibition but had no effect on the gastrointestinal symptoms, sweating, salivation, bradycardia, or central neural symptoms produced by the anticholinesterase compounds. The injection of DAM at a rate of 60 to 300 mg. per minute resulted in a burning sensation radiating up the injected vein, followed by moderate giddiness, drowsiness, sensation of warmth and tingling in the abdomen and chest, and usually slight reduction in blood pressure and increase in cardiac rate, recumbent and standing. These effects lasted for one to five minutes after cessation of the injection. Injection of DAM at a slower rate, or of 2-PAM at a rate up to 300 mg. per minute, resulted in no local or systemic signs or symptoms except for slight tachycardia on standing. The intra-arterial injection of 20 mg. or more of 2-PAM, in the absence of anticholinesterase compound, produced transient weakness and neuromuscular block.[6] DAM had no such effect. Neither compound produced weakness after intravenous injection of 2,000 mg.

Report of a Case

A 60-year-old male had moderately severe generalized myasthenia gravis of three years' duration. His condition had been satisfactorily regulated with 240 mg. of pyridostigmine four times a day. He was inadvertently administered 180 mg. of enteric-coated neostigmine (long-acting) in place of his early morning dose of pyridostigmine. One hour later he developed severe nausea, abdominal cramps, explosive diarrhea, salivation, sweating, and generalized muscular fasciculations. Prior to the administration of neostigmine he had been moderately weak, at his usual basal strength. One hour after the neostigmine he became much weaker, with increased dysarthria, dysphagia, and weakness of the muscles of the face, neck, and extremities (fig. 3). His symptoms were unchanged during the next two hours. He was then given 1,000 mg. of 2-PAM intravenously over a period of 10 minutes. By the end of the period of injection there was a moderate improvement in strength and slight diminution of fasciculations. There was no change in the gastrointestinal symptoms, so that 1 mg. of atropine sulfate was then injected intravenously, with prompt amelioration of these symptoms. Fifteen minutes after the administration of 2-PAM there was a moderate decline in strength but not to the level that had been present prior to the injection of oxime. One hour later the strength again began to improve, reached the maximal level that was usually present after optimal doses of anticholinesterase medicament, and remained at this level for the rest of the day. Fasciculations gradually disappeared. There was no apparent effect of 2-PAM on plasma and red blood cell cholinesterase activity, which had been markedly depressed and which slowly returned to normal over a period of 24 hours.

Comment

The management of intoxication due to anticholinesterase compounds has hitherto relied upon administration of large doses of atropine, aspiration of bronchial and salivary secretions, maintenance of an adequate airway, and artificial respiration when needed.[3] In contrast to atropine, 2-PAM or DAM administered intravenously in adequate doses ameliorates muscular weakness and should diminish the necessity for, or duration of, mechanical measures to sustain respiration. However, since weakness may develop rapidly in the course of severe anticholinesterase intoxication, these measures will undoubtedly still be needed in many patients. The intravenous administration of adequate doses of atropine also remains an important adjunct in treatment, since the oximes do not appear to reverse the muscarine-like and central neural manifestations of anticholinesterase intoxication.

While the optimal and toxic doses of oxime and the optimal frequency of administration are not yet known, the doses employed in this study were well tolerated and moderately effective. The following procedure is therefore recommended for the management of intoxication due to organophosphorus or quaternary ammonium anticholinesterase compounds occurring in normal subjects or in patients with myasthenia gravis:

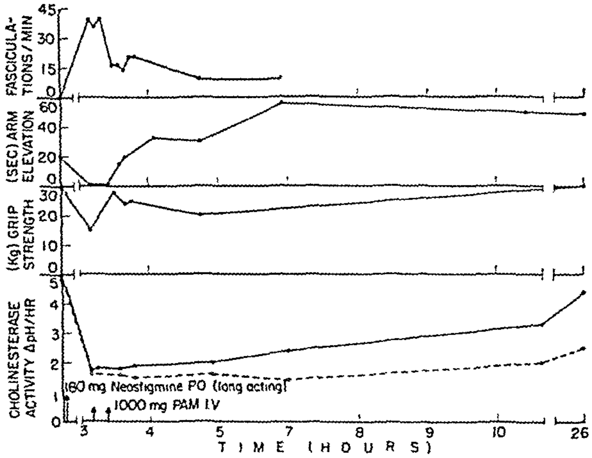

Fig. 3.—Reversal by 2-PAM of generalized weakness and muscular fasciculations produced by excess neostigmine in myasthenic patient. There was no apparent reversal of plasma (solid line) and red blood cell (broken line) cholinesterase inhibition.

1. Terminate the exposure by removal of the casualty or use of gas mask if atmosphere is contaminated by organophosphorus compound, removal of contaminated clothing, washing of contaminated skin or eyes with copious amounts of water, gastric lavage if ingestion has occurred, and application of a tourniquet if exposure is percutaneous or intramuscular.
2. Remove secretions and maintain patent airway by having patient in prone position with head down and to one side, mandible elevated, and tongue pulled forward, clear mouth and pharynx with finger or suction, maintain oropharyngeal or nasopharyngeal airway in unconscious or flaccid patients, or perform endotracheal intubation if airway obstruction persists.

3. Apply artificial respiration when necessary by mouth-to-mouth, mask-to-mask, bellows, or mechanical means.[3]

4. Administer atropine in severe intoxication, particularly by organophosphorus compounds, 2 to 4 mg. intravenously, followed by 2 mg. every three to eight minutes until muscarine-like symptoms disappear and whenever they reappear; a total of 24 to 48 mg. may be required the first day. In less severe intoxication give 2 mg. intravenously or intramuscularly, repeat at 20-minute intervals until muscarine-like symptoms are relieved; maintain a mild degree of atropinization for 24 to 48 hours.[3]

5. For oxime administration in severe intoxication, give 2,000 mg. of 2-PAM (500 mg. per minute) or DAM (200 mg. per minute) intravenously; repeat dose if weakness is not relieved, or recurs. In moderate intoxication give 1,000 mg. intravenously and repeat if weakness is not relieved or recurs.

6. Alleviate convulsions if these interfere with respiration with trimethadione (Tridione), 1 Gm. intravenously every 15 minutes up to a maximum of 5 Gm., or with sodium thiopental (2.5% solution) intravenously.[3]

While the oximes are equally effective in the treatment of anticholinesterase intoxication in normal subjects and myasthenic patients, more cautious administration is necessary in the latter. In myasthenic patients who are weak due to excess anticholinesterase medication, appropriate doses of oxime will reduce the anticholinesterase effect to a more optimal level, thereby producing an increase in strength. However, further oxime administration will decrease the anticholinesterase effect to a suboptimal level, producing a reduction in strength. In patients with severe myasthenia, overtreatment with oxime may convert a "cholinergic crisis" into a "myasthenic crisis." It is therefore recommended that myasthenic patients suffering from anticholinesterase intoxication be "titrated" with successive 500 mg. doses of 2-PAM or DAM at 5-to-10-minute intervals until strength is restored to the maximal level attained after the administration of optimal doses of anticholinesterase compound. In patients with severe myasthenia who are receiving large amounts of anticholinesterase medication, it is sometimes difficult to determine whether an increase in weakness is due to an overdose of medication (cholinergic crisis) or to the need for more drug (myasthenic crisis). The effect of oxime administration is helpful in making this differentiation: an increase in strength points to the former, and a decrease to the latter.

Summary

Intravenous administration of 1,000 to 2,000 mg. of pyridine-2-aldoxime (2-PAM) or diacetyl monoxime (DAM) ameliorated generalized weakness produced by quaternary ammonium or organophosphorus anticholinesterase compounds in normal subjects and in patients with myasthenia gravis. These oximes are valuable adjuncts to atropine in the management of anticholinesterase intoxication, and should diminish the necessity for, or duration of, artificial respiration and endotracheal intubation. More cautious administration is necessary in myasthenic patients in whom overtreatment with oxime returns strength to the basal level present prior to the administration of anticholinesterase compound.

601 N. Broadway (5) (Dr. Grob).

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The 2-PAM and DAM used in this study were supplied by Dr. Henry J. Wills of the Army Chemical Corps.

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VITAMIN A DEFICIENCY IN AN INFANT

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This report presents another case of vitamin A deficiency in an infant treated for eczema with a formula of soybean milk without vitamin A supplement (Mull-Soy). The Vitamin A deficiency developed by the third month of life, probably because of low prenatal stores of Vitamin A. The mother was on a low-animal-fat diet without Vitamin A in her diet during pregnancy.

It has been stated that the common use of multiple vitamins in infancy is unnecessary, that vitamin A is abundant in milk, and that only vitamin D should be added to the infant's diet. This does not apply to infants who are allergic to animal milks and have been placed on soybean milk substitutes without vitamin A. The purpose of this report is to reemphasize the necessity for vitamin A supplementation for infants on soybean milk formulas and for rigorous supervision in this respect.

Report of a Case

History and Initial Treatment.—An infant was first seen at the age of 7 weeks with coryza and diarrheal bowel movements. He weighed 3,100 Gm. (6.5 lb.) and showed a mild eczema of the face for which he had been placed on a soybean milk formula without any vitamin supplement. He was born prematurely, weighing 1,800 Gm. (4.2 lb.). There were three other siblings and no miscarriages or deaths. One older sibling had been seen at one year of age with active rickets. The mother and sister had had asthma. The infant was kept on soybean milk formula, and the mother was instructed to give him 0.6 cc. daily of a vitamin compound containing 5,000 units of vitamin A, 1,000 units vitamin D, and 50 mg. of ascorbic acid (Tri-Vi-Sol).

He did not return for observation until two months later when he was 3½ months old and weighed only 3,400 Gm. (7.5 lb.). He had a coarse bronchitis and was anorectic. The mother had noted a facial palsy on the left. Both corneas were cloudy, and there was a catarrhal otitis media on the left. The eyegrounds could not be visualized. The mother had had a negative blood Wassermann test during her pregnancy. A blood Wassermann test on the infant proved negative, but he was treated with intramuscularly and orally given penicillin for one week without improvement.

Although the mother was advised to return with the infant within a few days, he was not seen again for almost two months. He was now 5 months old and weighed only 3,600 Gm. (8 lb.). He was still on a soybean milk formula. He had a croupy cough and a bilateral catarrhal otitis media. Both eyes were severely involved with keratitis. There was no eczema, and the skin was not dry. A facial palsy was present on the left. The neck was somewhat stiff, and the anterior fontanel was tense. The abdomen was distended. There was no gynecomastia.

On questioning the mother, she admitted that she had been erratic in giving the infant his vitamin supplement. During her pregnancy she had abhorred milk and butter. Blood was drawn from the infant for vitamin A determination, and he was given 2 cc. of an aqueous solution injectable intramuscularly, containing 10,000 U.S.P. units of vitamin A, 1,000 units of vitamin D, and vitamins E, C, and B complex (Vi-Syneral).

Hospital Course.—The infant was admitted to the Barnert Memorial Hospital on Dec. 21, 1955, for further study.

Results of Eye Consultation: An eye consultation (with Dr. Philip Opper) resulted in the following information. In the right eye there was a severe keratitis present, with a grayish look to the entire cornea. There were many phlyctenules present, and one in particular at 4 o'clock was deep and appeared ready to rupture. The pupil was small. The conjunctiva close to the limbus was dry and injected. In the left eye the cornea was more gray and opaque than in the right. There was a forward bulging of the cornea (ectasia and staphyloma) with involvement of the iris. The anterior chamber could not be visualized. The conjunctiva was dry and injected. Atropine sulfate solution, 0.5%, and a hydrocortisone (Neo-Cortef) ointment into each eye three times a day was ordered.

Laboratory Data: Urinalysis showed no sugar or albumin present. There were one to two red blood cells per high-power field and four to six leukocytes per high-power field. Amorphous urates were present. The hemoglobin level was 8.0 Gm. per 100 cc. The red blood cell count was 3,700,000 per cubic millimeter; (color index 0.74); The white blood cell count was 8,200 with 2% neutrophil stab cells, 15% polymorphnuclear cells, 78% lymphocytes, and 5% monocytes. There was moderate achromia and anisocytosis.

The blood calcium level was 12.5 mg. per 100 cc., and the blood phosphorus level was 4.4 mg. per 100 cc. A stool specimen showed no starch granules microscopically but a normal amount of fat globules. A gelatin film test showed no trypsin present in dilutions of 1:5 and 1:100. Blood Mazzini tests were negative for mother and patient. A tuberculin patch test was negative.

Serum Vitamin A and Serum Carotene Determinations: Serum vitamin A and carotene determinations were made on Dec. 21, 1955 (Dr. David Adlersberg, Mount Sinai Hospital, New York). The serum vitamin A level was zero (normal 60 to 100) mcg. per 100 cc. The serum carotene level was 26 mcg. per 100 cc. (normal 100-200).

Roentgenograms and Therapy: Roentgenograms of the heart, lungs, and long bones were normal. The skull showed widening of the suture lines. A spinal tap was attempted, but the infant became cyanotic and the procedure was discontinued.

The infant remained in the hospital for one week, during which time he received 5,000 units of vitamin A daily, the routine prophylactic dose. He was noted to have a blocked nose with a greenish nasal discharge. His neck and back were arched and he preferred to lie on his back. He was released for office care on Dec. 28, 1955.

Subsequent Course.—Although the infant received only one inoculation of aqueous vitamin A intramuscularly prior to his hospital admission and 5,000 units daily orally for seven days during his hospital stay, he showed a dramatic response to that short period of therapy. His appetite improved, he looked about him, and the cornea of the right eye began to show enough clearing so that the iris was visible. The conjunctivas were less dry. In the two weeks that followed he received a total of 50,000 units of vitamin A aqueous by injection and 262,500 units orally (18,700 units daily). At the end of the two weeks he weighed 4,500 Gm. (10 lb.). The cornea of the right eye had cleared, and a scar was visible at 4 o'clock. The left cornea still looked gray and cooked with bulging, but the phlyctenules were healing.

In April, 1956, the patient, aged 9 months, was examined. The right eye was well healed with a scar as noted. The left cornea was scarred diffusely, and the sight was im-

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paired. Blood samples from the mother and baby for vitamin A determination were hemolyzed in delivery to the laboratory. On May 25, 1956, blood was drawn again from mother and patient. In the infant the serum vitamin A concentration was 43 mcg. and the serum carotene level 42 mcg. per 100 cc. In the mother the serum vitamin A concentration was 39 mcg. and the serum carotene concentration 72 mcg. per 100 cc.

In August, 1956, the patient, aged 13 months, had been able to sit up for two weeks, was taking homogenized milk, and was getting 18,700 units of vitamin A daily. Vision in the right eye was good. The iris of the left eye was not visible. In October, 1956, the patient, aged 15 months, weighed 11.8 kg. (26 lb.). He had eight teeth, but was not walking.

Comment

Although numerous cases of hypervitaminosis A have been reported in recent years, vitamin A deficiency in infancy has been observed infrequently. From 1920 to 1932, eight leading children's hospitals in the United States and Canada reported a total of 23 cases of xerophthalmia in all their admissions.[1] In 1933 Blackfan and Walbach [2] reported a case of vitamin A deficiency in an infant. In 1952 Cornfeld and Cooke [3] and in 1955 Bass and Caplan [4] each reported another.

The following presenting signs of vitamin A deficiency in infancy have been described: xerophthalmia; cornified vaginal epithelium; mental and physical retardation; anemia resistant to treatment with iron, folic acid, and liver; erythroid suppression of bone marrow; hepatosplenomegaly; increased cerebrospinal fluid pressure; seventh cranial nerve injury, and gynecomastia. The signs of vitamin A deficiency which are referable to the eyes and epithelial structures are well known. Signs referable to the nervous system, however, such as facial palsy, neck and back stiffness, and hydrocephalus, described in more recent reports, are less well known and understood.

The mechanism of the production of the hydrocephalus, reported both in cases of hypervitaminosis A as well as in hypovitaminosis A, is not clear. The increased spinal fluid pressure is relieved by tapping and vitamin A administration. The chemistry and cytology of the fluid is normal.

The diet of the mother in relationship to vitamin A deficiency in the infant is of importance. If the diet of the pregnant mother is extremely low in vitamin A, or if she is suffering from a disorder which interferes with the absorption of this vitamin, the newborn infant may have low stores of vitamin A, or even manifestations of vitamin A deficiency, as was shown by Maxwell [5] in China.

Summary

A 3-month-old infant had vitamin A deficiency. The mother was on a low-fat diet without vitamin A supplement during pregnancy. The infant's vitamin A blood level was zero at the time of initial examination. He responded well to vitamin A therapy. One eye cleared with a small residual scar; the other eye healed with considerable scarring and loss of vision. Infants who are allergic and who are on a soybean milk diet lacking in vitamin A must be rigorously supervised to see that vitamin A is added daily to the diet.

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MALNUTRITION AND VIRAL INFECTION.—As astute observers have noted, the old concept that famine and pestilence go hand in hand does not always prove true. This was first observed by Underwood in 1789. He stated that at times well nourished children were more susceptible to infection than were poorly nourished ones. In 1942 one of us submitted this to experimental proof, and found that under certain conditions of starvation the rabbit became more resistant to infection with vaccinia. This concept has since been fully substantiated by various investigators. . . . The general consensus respecting the obligate host-parasite relationship is that any influence inhibitory to host tissue metabolism will also be inhibitory to viral agents. Our further experiments have led us to conclude that the effect of malnutrition on the resistance of an animal is dependent upon the state of the animal's nutritional reserves at the time of the infection. A well nourished animal on a poor diet becomes at first more susceptible to viral infection, then less susceptible, and terminally more susceptible again.—D. H. Sprunt, M.D., and C. C. Flanigan, Ph.D., The Effect of Malnutrition on the Susceptibility of the Host to Viral Infection, *The Journal of Experimental Medicine*, Nov. 1, 1956.

BLOOD AND URINE LEVELS IN GLUTETHIMIDE (DORIDEN) INTOXICATION

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and
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The widespread use of the popular nonbarbiturate sedative glutethimide (Doriden) has been accompanied by occasional reports of overdoses of this drug. Four fatal cases, allegedly due to poisoning by glutethimide, were documented for the first time by both autopsy reports and toxicological analysis.[1] The authors used the colorimetric method of Sheppard and co-workers [2] to measure a metabolite of glutethimide in the urine. The attempts of McBay and Katsas [1] to apply this method to blood measurements were unsuccessful. They did find that after therapeutic doses the amount of the metabolite in human urine averaged 2.2 to 2.7 mg. per hour or 4.4 to 5.8 mg. per 100 cc. for periods of 54 to 60 hours after ingestion of glutethimide. In their four fatal cases, an average of 39.5 mg. per 100 cc. of the metabolite was found in the urine. A study of the cases presented in the report indicated that the lethal dose of glutethimide for the adult human being is from 10 to 20 Gm.

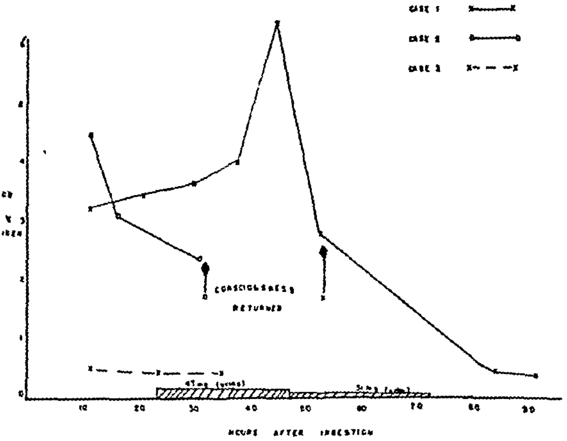

Fig. 1.—Blood glutethimide levels in three patients with glutethimide intoxication.

Report of Cases

In our experience with four nonfatal cases of glutethimide intoxication, both blood and urine levels were determined by the ultraviolet absorption method of Goldbaum and associates.[3]

Case 1 (fig. 1).—A 57-year-old female had ingested large amounts of alcohol and approximately 10 Gm. of glutethimide. Gastric lavage was not done, and the patient was given symptomatic and supportive treatment only. She remained comatose for 54 hours. The maximum blood level of 6.3 mg. per 100 cc. was not reached until 46 hours after ingestion. This was followed by a rapid decrease in the blood glutethimide level. During the 24-hour interval preceding the attainment of the maximum blood level, urinary excretion occurred at the rate of 2 mg. per hour. In the next 24-hour interval, urinary excretion occurred at the rate of 1.3 mg. per hour. The patient regained consciousness when the blood level fell below 2.8 mg. per 100 cc.

Case 2 (fig. 1).—An 18-year-old male had ingested approximately 5 Gm. of glutethimide and an unknown quantity of meprobamate. The patient was comatose upon arrival at the hospital emergency room. The maximum blood level of 4.3 mg. per 100 cc. was reached 12 hours after ingestion. The blood level then continued to fall for 32 hours, when consciousness returned. At this time the blood level was 2.4 mg. per 100 cc. The patient was discharged the next day.

Case 3 (fig. 1).—A 53-year-old female was admitted in a comatose state. It was reported that she had been drinking heavily, having consumed a fifth of whiskey in 24 hours, and that she also had taken an apparent overdose of glutethimide (amount unkown). The blood glutethimide level 12 hours after ingestion was 0.5 mg. per 100 cc., and the blood alcohol level was 163 mg. per 100 cc. The glutethimide level fell progressively until it reached a level of 0.3 mg. per 100 cc. 36 hours after ingestion. At these low blood glutethimide levels, the urinary excretion for the period from 12 to 24 hours after ingestion averaged 0.14 mg. per hour, and for the next 24 hours averaged 0.09 mg. per hour. The patient was discharged the next day.

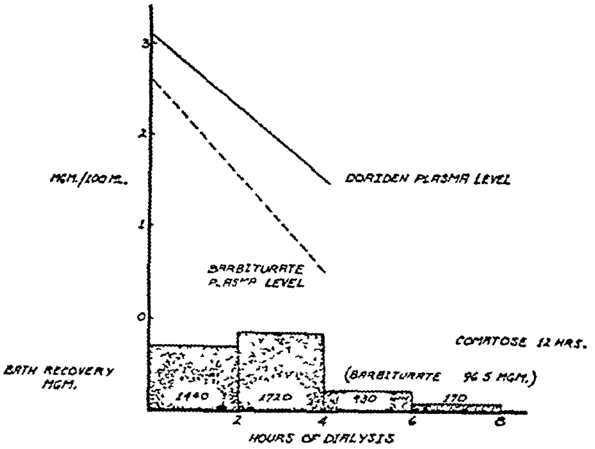

Fig. 2.—Data on hemodialysis of patient with glutethimide intoxication.

Case 4 (fig. 2).—An 18-year-old female was found unconscious after having ingested 10 Gm. of glutethimide and approximately 3 grains (0.2 Gm.) of Tuinal—a combination of

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secobarbital (Seconal) sodium and amobarbital (Amytal) sodium. Gastric lavage was carried out about four hours after ingestion. The patient showed temporary improvement, which was followed by acute respiratory depression and circulatory collapse. She was then placed on therapy with the Kolff artificial kidney in an attempt to lower the drug levels by hemodialysis (see table). Blood levels immediately before dialysis (10 hours after ingestion) were 3.1 mg. per 100 cc. of glutethimide and 2.6 mg. per 100 cc. of barbiturate; four hours after dialysis they were 1.5 mg. per 100 cc. of glutethimide and 0.5 mg. per 100 cc. of barbiturate.

Analytical Results of Dialysis

	Dialysate Levels, Mg./Hr.	
2-Hr. Periods	Glutethimide	Barbiturate*
1st	720	5.6
2nd	860	7.4
3rd	215	12.5
4th	85	22.8

* Barbiturate levels were determined by ultraviolet method of Goldbaum: *Analyt. Chem.* 24:1604 1952.

The patient was still comatose at the end of dialysis, but the respirations were deeper and the rate was 20 to 24 per minute. The patient responded to stimuli eight hours after the end of dialysis but was incoherent, restless, and cried frequently. Suction was no longer necessary. Intravenous administration of fluids was continued throughout the 24-hour period after dialysis. She continued to improve, and after another 12 hours oral feeding was started. She was emotionally disturbed throughout the day after dialysis but from that time on had a fairly normal convalescent period. She was discharged on the sixth day.

Conclusions

The ultraviolet absorption method for the analysis of glutethimide in blood and urine was used in four patients with glutethimide intoxication. The ingestion of glutethimide is followed by a fairly constant and prolonged excretion (2 to 3 mg. per hour). This result is in agreement with that of another group of workers who used a colorimetric method of analysis. The blood level of glutethimide decreases slowly after ingestion. Narcosis is produced at blood levels of 2 to 3 mg. per 100 cc. or higher. Hemodialysis removes glutethimide at a more rapid rate (100 to 400 times) than does the normal kidney. Gastric lavage should be undertaken any time after ingestion of glutethimide. Other drugs depressant to the central nervous system such as alcohol and barbiturates react synergistically with glutethimide.

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COUNCIL ON FOODS AND NUTRITION

Report to the Council

The Council has authorized publication of the following report. This article is part of a nutrition education program which is assisted by the Nutrition Foundation, Inc.

Philip L. White, Sc.D., *Secretary*

NUTRITION IN RELATION TO DERMATOLOGY

Allan L. Lorincz, M.D., Chicago

Among both lay and medical persons, there are misconceptions and fads concerning the relationship of diet and nutrition to skin eruptions. The less sophisticated tend to incriminate specific foods or "acid in the system" as causative factors, whereas the more sophisticated like to think in terms of some deficiency, especially some vitamin deficiency. Even physicians are inclined to overrate the role of food allergies or deficient diets in skin eruptions. In contrast to these beliefs, the overwhelming majority of common skin disturbances are not significantly connected with these dietary or nutritional allergies or deficiencies.

Dermatological Aspects of Obesity

From the viewpoint of the present-day American clinical dermatologist, malnutrition in the form of overeating, which leads to alimentary obesity, is by far the most frequently encountered nutritional disturbance that causes or aggravates skin diseases. Obesity precipitates or promotes a variety of skin disorders in intertriginous locations, such as

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nonspecific intertrigo, superficial moniliasis, pyodermas, and seborrheic and other forms of eczematous dermatitis, largely as a consequence of the accumulation of heat and moisture between folds of skin. This accumulation produces maceration of the skin in those areas and favors the growth of potentially pathogenic bacteria and fungi. Increased mechanical irritation in the form of chafing further fosters intertriginous skin disorders in the obese person. A special, rare variety of intertriginous skin disturbance associated with obesity is juvenile acanthosis nigricans, which is characterized by a melanotic, velvety verrucosity of the involved skin surfaces. The recent association with this condition of an unusual pituitary disturbance showing proliferation of anterior lobe basophils is noteworthy[1] and may offer a clue to further knowledge about factors involved in some cases in which excessive appetite results in overeating and obesity.

Because dissipation of body heat by conduction and radiation is impaired by a thick subcutaneous adipose layer, obese persons become overheated easily and, therefore, tend to sweat more profusely. The adverse effects of excessive sweating on normal skin and especially on most inflammatory dermatoses, chiefly because of sweat-retention phenomena, are well known and have been presented at length in a recent monograph.[2] So-called prickly heat or miliaria rubra is the most commonly recognized manifestation of such sweat retention.

Another large segment of dermatological ills often precipitated or aggravated by obesity consists of the common stasis eczema and ulcer syndromes. In pronounced obesity it becomes almost impossible to manage these common problems satisfactorily. Other unfavorable dermatological implications of obesity include striae distensae from excessive stretching of the skin in predisposed individuals, a frequently provocative influence on the course of psoriasis, and increased occurrence of diabetes mellitus, with its attendant cutaneous complications, such as severe pyogenic and monilial infections, diabetic gangrene, necrobiosis lipoidica diabeticorum, and hyperlipemic eruptive xanthomas. In view of the high incidence of overeating and obesity in the United States (an estimated 15 million of our population exceed their so-called ideal weights by 20%), it is not surprising that measures aimed at controlling this nutritional problem are frequently necessary in the management of skin disorders.

Dietary Restrictions

More specific restriction or modification of food intake that has practical value in dermatological therapy includes the sharp restriction of carbohydrate consumption in chronic furunculosis and hidradenitis. These staphylococcic follicular pyodermas are difficult to manage because of the ready emergence of antibiotic-resistant strains of staphylococci, the impracticability of continuous antibiotic therapy, and the failure of antibiotics to reach foci of activity often isolated by scarring. The reasons for the empirical value of low-carbohydrate intake in these infections are not definitely known. Possibly lowering of the glucose content of the skin occurs, making the skin a less favorable substrate for the causative organisms. An unconfirmed suggestion has been made that in some individuals a condition called "skin diabetes" may exist, which is characterized by excessive retention of glucose only in the skin.[3]

Most observers feel that diets excessively high in carbohydrate and fat content have a provocative effect on acne vulgaris. Experimentally, this general impression receives support from the apparently increased sebaceous gland activity that has been demonstrated in persons on such diets.[4] Although increased activity of the sebaceous glands is clearly not the only factor involved in causing acne vulgaris, it is, nevertheless, a constant feature of the disease. In general, the role of dietary factors in acne vulgaris is a minor one upon which too much popular emphasis has been placed. This view is supported by the commonly observed failure of often self-imposed rigid dietary restrictions in unhappy teen-age acne sufferers to result in anything except frustration and undernourishment.

Another dermatologically useful type of dietary restriction is the diet extremely low in fat (less than 25 Gm. of fat daily), which is of value in xanthomatoses, especially the hyperlipemic types. These diets are difficult to prepare and tend to have borderline palatability. It seems difficult to understand the reported beneficial effects that these extremely low-fat diets have on the cutaneous xanthomas seen in hypercholesterolemic xanthomatosis,[5] in view of the well-known endogenous production of cholesterol. The hypothesis has been offered that the low fatty acid content of these diets interferes with the normal intestinal resorption of cholesterol excreted into the intestinal tract by way of the biliary system. In this way, endogenously produced cholesterol could be excreted and lost from the body in fairly large quantities.

Although many attempts have been made to treat psoriasis with lipotropic agents and dietary measures, such approaches, at best, have had sporadic success. As yet, no disturbances of cholesterol or lipid metabolism have been clearly demonstrated in psoriasis. The role of specific dietary exclusions in controlling cutaneous manifestations of specific food allergies is beyond the scope of this discussion. Specific food allergies play only a very limited role in causing skin diseases, and when they do, they usually produce urticarial eruptions.

Riboflavin deficiency is believed to result in a syndrome characterized by cheilosis or perleche, sore magenta tongue, seborrheic dermatitis about the nose and scrotum, and vascularization of the cornea. In practice, however, these rather common nonspecific findings in the average patient are often caused by other than riboflavin deficiency. Various local irritants are frequently responsible for these changes observed clinically. Experimentally, there is evidence that pure riboflavin deficiency results chiefly in delayed healing, and that even the so-called specific stigmata of this deficiency require the triggering action of local trauma, irritation, or infection. Severe rosacea keratitis hardly ever is benefited by the administration of riboflavin.

No other members of the B complex group of vitamins play any current role in dermatological practice as replacement therapy, although experimentally interesting cutaneous changes have been associated in man and animals with specifically induced deficiencies.[13] The fairly recent suggestion that seborrheic dermatitis of the sicca type, as it occurs clinically, might represent a local metabolic defect involving vitamin B_6 and that this common dermatosis responds to such vitamin therapy either topically or systemically[14] has not found support on the basis of wider experience.

The proposed role of miscellaneous B vitamins, especially pantothenic acid, in the prevention of common graying of hair in man is now antiquated. Enormous doses of *p*-aminobenzoic acid, however, when used experimentally in the treatment of lymphoblastomas, have occasionally been associated with repigmentation of gray hair.[15]

The relatively short-lived era of the effective chemotherapeutic use of *p*-aminobenzoic acid as an antirickettsial agent deserves mention. On the other hand, the use of huge unphysiological doses of *p*-aminobenzoic acid and pantothenate preparations in a wide variety of other skin and systemic disorders has not had sufficient success to warrant such use.

With the advent of antibiotics and newer chemotherapeutic agents, such as isonicotinic acid hydrozide, some B complex deficiencies have been fostered not only by reduction of supplies of some of these vitamins produced by intestinal flora but also by specific metabolic antagonism. These effects require clinical attention and alertness to their possible occurrence.

Vitamin C.—Lack of sufficient ascorbic acid results in one of the earliest recognized specific dietary deficiency diseases, scurvy. In the skin, scurvy is manifested chiefly by purpura caused by capillary fragility. Another common cutaneous finding is follicular hyperkeratosis and melanosis not unlike that classically associated with vitamin A deficiency. In scurvy there is also defective formation of connective tissue with consequent defective wound healing. For extensive burns or wounds, the utilization and requirements of ascorbic acid may increase enormously, as judged from ascorbic acid administration and urinary excretion studies performed under these conditions.

Other Vitamins.—Capillary fragility and purpura have been associated with experimental bioflavonoid deficiency, but the flavonoids have no proved dermatological usefulness. Vitamin K deficiency produces cutaneous purpura, as a consequence of defective prothrombin synthesis rather than of capillary fragility. This deficiency is sometimes encountered as a clinical entity in the newborn infant and is observed in obstructive jaundice. Vitamin K is useful clinically in counteracting the hemorrhagic effects of bishydroxycoumarin (Dicumarol) and other coumarins. Vitamin K preparations have primary vesicant actions when applied topically to the skin in high concentrations. Vitamin E has no experimental or proved therapeutic role in relation to the skin, despite many attempts to demonstrate such roles.

Vitamin D is of interest to the dermatologist. The antirachitic effect of sunlight is based upon conversion of vitamin D precursors near the skin surface to the active vitamin that it absorbed systemically. Vitamin D in huge doses had a historically short-lived but spectacular therapeutic success in lupus vulgaris, but its use has been largely rendered obsolete by the advent of highly effective antituberculosis drugs. It might be mentioned that topical applications of many members of the B complex group, as well as of vitamin D, have permitted sufficient systemic absorption percutaneously to relieve experimental specific deficiency syndromes in animals.[16]

Fats.—Much impressive experimental work has been done on the cutaneous syndrome produced in animals by deficiency of the essential unsaturated fatty acids. Studies in man suggest that deficiency of polyunsaturated fatty acids may be related to certain skin diseases, but much more investigation is needed. The popularity of internal lard therapy for various kinds of eczematous dermatitis, particularly infantile eczema, has waned, probably because of the lack of specific value.

Minerals.—Knowledge of minerals and trace elements in nutrition in relation to dermatology is experimental and largely of academic interest, because deficiencies of these elements are not encountered clinically. A possible exception is the occurrence of spoon nails in iron deficiency anemias.

Summary

In contrast to popular beliefs, food allergies or nutritional deficiencies play only an insignificant role in the skin eruptions commonly seen in the United States. Alimentary obesity is by far the most frequently encountered form of malnutrition that precipitates or aggravates skin eruptions. Intertriginous eruptions and stasis leg eczema and ulcers are especially common skin disorders promoted by obesity. Sharp restriction of carbohydrate intake is a helpful adjunct in the management of chronic follicular pyodermas, and diets low in fat are of value in xanthomatoses. Dietary factors in acne vulgaris and psoriasis are generally overrated. Even in genuine nutritional deficiency, cutaneous manifestations are rarely so distinctive as to allow from them diagnosis of the specific deficiencies. In general undernutrition, the skin may show a gamut of features seen in various specific nutritional deficiencies, such as pallor, dryness, loss of elasticity, hyperkeratosis and scaling, melanosis, purpura, edema, loss of hair pigment, dystrophic hair and nail changes, and increased susceptibility to infections and irritations. Inadequate protein nutrition is reflected in the skin chiefly by nutritional edema and decreased resistance to infections.

Vitamin A in large doses has antikeratinizing effects that have sometimes been useful in the treatment of the rare diseases pityriasis rubra pilaris and Darier's disease. Similar use of vitamin A generally has not been successful in other skin disorders associated with hyperkeratosis. Severe vitamin A excesses produce serious toxic effects and are especially to be avoided in infants, children, and pregnant women. The B vitamins are of little rational use in modern American dermatological practice, although the application of knowledge of nicotinic acid can be credited with the virtual eradication of pellagra in this country. The success of ascorbic acid in treating scurvy is similarly spectacular. Ascorbic acid requirements increase under conditions requiring the repair of extensive injuries. From a dermatological viewpoint, other nutritional factors have mostly only academic interest today; they find little practical application.

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POLIOMYELITIS AND MUMPS.—The results of recent intensive clinical and experimental studies on poliomyelitis have led to the abandonment of many of the earlier concepts. The hypothesis of axonal spread of the causative organism has practically given way to the acceptance of spread via the blood stream. The significance of physical exertion as an aetiological factor has assumed lesser proportions, and the theory of an exclusive neurotropism of the poliomyelitis virus has been displaced by the concept of pantropism. Even the view of primary pantropism of the poliomyelitis virus with the capacity to produce a special neurotropic variant . . . is hardly tenable now. Most workers . . . reject exclusive neurotropism of true poliomyelitis strains, particularly as a result of the work of Enders . . . who was able to obtain poliomyelitis virus cultures in non-neural tissues. The causative organism of poliomyelitis is, therefore, one of the viruses which may settle in various organs and may cause disease in them. In this respect it resembles the virus of mumps which may affect the parotid glands, the pancreas and the sex organs, as well as the central nervous system and the meninges.—W. Linder and U. Festge, Poliomyelitis and Mumps, *German Medical Monthly*, July, 1957.

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HOME-CARE PROGRAMS

THE OLDEST program for the organized home care of patients who would otherwise require hospital care was started in Boston 162 years ago, and it is still functioning. There has been a slow but steady increase in the number of such programs in recent years. In our aging population the number of patients with chronic illnesses is expected to rapidly increase. Hospitalization for all such patients is neither possible nor desirable, and that is the main reason for home care programs. In the simpler types of home care a visiting nurse carries out the instructions of a general practitioner. More elaborate plans provide an extension of the hospital to the home. Most of the patients are referred to the home care program not from outside the hospital but from the hospital wards. Before the patient is accepted for home care, the physician who will provide this care sees the patient and determines whether he is suitable for such treatment. Meanwhile a social worker arranges to meet an adult member of the family in the patient's home to appraise the emotional climate and adequacy of help. Home care is not advisable if both patient and family do not want it.

A home care program should be set up so that patients will not feel that it is a less adequate alternative to hospital care. The patient is seen at regular intervals by attending physicians and nurses from the hospital, and should the necessity for hospital care arise he is returned at once, without the red tape of readmission. The laboratory services of the hospital and the services of the entire consulting staff are available to the patient while at home, a feature which makes for continuity of patient care.

To be eligible, a patient must be unable to attend the outpatient clinic though not necessarily bedridden. The patients selected are chiefly elderly persons with heart disease, cancer, arthritis, multiple sclerosis, and muscular dystrophy. Home care may be desirable, however, for children because of their greater susceptibility to cross infection and the emotional trauma associated with removal from the home. Home care often shortens the patient's stay in the hospital, eliminates the necessity for frequent readmissions, and prevents the hospitalization of some patients and the custodial institutional care of others.

Home care programs have other advantages. Too often removal to a hospital destroys the last traces of a patient's independence, and this is followed by rapid deterioration in his physical and mental condition. Many patients who do poorly in the hospital make notable gains on home care. In the home it may be easier to forget one's illness; subconsciously, at least, death seems farther away when one is at home. Then, there is a marked reduction in the financial burden. The fact that members of the home care team come unsummoned in bad weather as well as good makes home care seem less a matter of course than hospital care and so the patient feels that his welfare is a matter of real concern. The shorter the preliminary period of hospitalization the easier the patient's readjustment to the home environment and the easier it is for his family to accept him. An adequate home care program can be established in almost any community, and for selected patients it is the best method of management. In the words of the poet, "Be it ever so humble, there's no place like home."

a salute to
medical school progress
MEDICAL EDUCATION
WEEK · · · · April 20-26

ORGANIZATION SECTION

RURAL HEALTH CONFERENCE

> "Rather than drive a car into a bustling metropolis for medical care [some rural folks] would rely on home remedies . . ."
>
> "We need less people in agriculture . . ."
>
> "The student in his years of training sees a preponderance of extremely difficult cases and develops a distorted picture of the complexity of medicine as it is practiced at the family level . . ."
>
> "The idea of 'government' taking over his [the average farmer's] medical care is galling. Health insurance is more in keeping with his philosophy . . ."
>
> "There is a question mark on the advisability of the medical profession using the prepared diet sheets supplied by commercial concerns . . ."

Those are a few of the thought-provoking comments made by 50 authorities in the fields of health, agriculture, economics, sociology, government, education, and safety last month at the 13th National Conference on Rural Health. As the three-day session closed March 8 for some 400 registrants, the Mississippi House of Representatives voted to commend the American Medical Association and the Mississippi State Medical Association for sponsoring the meeting in Jackson. Discussions in panels and in individual presentations centered around nutritional needs, dentistry, safety, doctor-patient relationships, physician distribution, health service costs, and changing social patterns—as these topics fit into the rural scene.

"Deeds, not words, measure the doctor before the tribunal of public opinion," Dr. Howard A. Nelson, President of the Mississippi State Medical Association, told the conference. "Medicine's prestige must be measured only in terms of worth and service. What medicine is and has been doing to make the total care concept a living reality is under no act of Congress or government bureau. . . . A lot of doctors is no more the answer to our new challenges than the idle hope that people just won't get sick. Proper distribution of our doctors is the biggest part of our answer, and facilities in which they can work is just about the rest."

Dr. F. J. L. Blasingame, general manager of the A. M. A., suggested that one way of bringing better medical care to rural people was to establish area hospitals, based on accessibility to a scattered population. He said: "Most rural people have cars and don't mind driving 30 to 40 miles for medical services. But some rural folks are frightened to death of city traffic. Rather than drive a car into a bustling metropolis for medical care they would rely on home remedies."

While calling for "monitoring closely" the status of physician distribution in this country "toward satisfying unmet needs for medical service," Dr. George E. Twente of Jackson said: "Too many cooks must eat their own porridge. We run a likely risk of deterioration in the presently high quality of medical care if we wantonly and needlessly oversupply the nation with physicians who can't realize their full service potential."

Exodus, Needs, Insurance, Diet

One of the best ways of alleviating some agricultural problems may be to help people leave farms and find other jobs, according to A. F. Wiledon, rural sociologist of the University of Wisconsin. He told the conference, "Today we need less people in agriculture in order to provide the food and fiber that this country needs. . . . Farming itself has become more and more of a business—a cold, calculating, competitive business."

Mrs. William Wilkie of Widener, Ark., chairman of the Arkansas Farm Bureau Women's Committee, described the medical care needs of three groups of rural people. The farmer, she said, wants good medical care and is willing to pay a moderate price for it; the share-cropper is more likely to have some doctor bills assumed by the farm owner; but "the marginal man is indeed a sad case. In this last group is the five to fifty acre farmer who is middle aged or past. He knows no other way of life. He has no family physician. This potential patient needs a place where he can have x-ray, cardiograph and diagnosis for which he pays a nominal fee."

Calling upon physicians to be more frank with their patients, Mrs. Wilkie said: "Knowledge is more manageable than anxiety. If the patient has questions the doctor has the answers. I am only one but there are thousands more like me who say, 'You lead the way. You initiate and control the programs and we will work with you. Let us do it for ourselves, together, so that the now open hand of government will not close around all of us.' The average farmer is known for his rugged individualism. The idea of 'government' taking over his medical care is galling. Health insurance is more in keeping with his philosophy, and I'm happy to say that more than half of all farm families have it."

Mrs. John B. Rice, president of the Illinois Health Improvement Association, told the conference that her agency has been organizing rural people and other self-employed into groups which make them eligible for Blue Cross and Blue Shield benefits at regular group rates.

The A. M. A. Council on Rural Health, according to H. H. Alp of Chicago, should take the lead in working for better nutrition for the whole nation, not just the rural areas. Alp, who is director of market development for the American Farm Bureau Federation, also said: "There is a question mark on the advisability of the medical profession using the prepared diet sheets supplied by commercial concerns. There is a great need for more basic nutritional education in our medical schools."

Safety, Preceptorship, Setting

In a panel on safety education, Dr. H. A. Matthews of Canton, N. C., said: "Accident-prone children need medical consultation as much or more than the child who has frequent colds. The wise parent will consider accident hazards in the home quite as much as shots to prevent illness."

Participants in National Conference on Rural Health in Jackson, Miss., last month. Left to right, Dr. Guy T. Vise, President-elect of the Mississippi State Medical Association; Dr. F. S. Crockett, Chairman of the A. M. A. Council on Rural Health; Dr. F. J. L. Blasingame, A. M. A. General Manager, and Dr. Howard A. Nelson, President of the Mississippi State Medical Association.

Dr. Robert E. Reiheld of Orrville, Ohio, told the conference about the preceptorship program in his state. Such a program tends to counteract the trend toward medical specialization by familiarizing the student with day-to-day activities of the general practitioner. Many medical students, said Dr. Reiheld, are overly exposed to a specialist environment because they attend medical schools and take residency training in metropolitan areas and encounter difficult cases in urban medical centers. "The student in his years of training sees a preponderance of extremely difficult cases and develops a distorted picture of the complexity of medicine as it is practiced at the family level," said Dr. Reiheld.

Urging that farm people evolve a sound agricultural program "with the sympathetic interest and cooperatin of other groups," and rely less and less on government, Mrs. Charles W. Sewell of Otterbein, Ind., co-founder of the A. M. A.'s rural health program, said: "In this way the income of farm communities will support living conditions that will attract well-trained young physicians into rural areas and maintain clinics and hospitals necessary to the best modern day practice of medicine."

Her stand was echoed by fellow founder F. S. Crockett of Lafayette, Ind., chairman of the A. M. A Council on Rural Health. "Most of the things that mean so much, that contribute so much to making a house a home, or a plot of land a farm home, can be created by ourselves or with the help of neighbors," said Dr. Crockett. "We don't have to wait for somebody sent from the Governor or President's office to do it for us. . . . Health is influenced by much more than just good medical care. I have in mind good schools and churches, hard-top roads to market, efficient telephone and power services, a good county health service, an effective county agent promoting improved farm management and production practices, and county home demonstration agents interesting the home makers in more attractive living."

Other members of the Council are Drs. W. J. Weese of Ontario, Ore.; W. A. Wright of Williston, N. D.; W. W. Washburn of Boiling Springs, N. C.; C. S. Mundy of Toledo, Ohio; C. R. Henry of Little Rock, Ark.; F. A. Humphrey of Fort Collins, Colo.; N. H. Gardner of East Hampton, Conn.; A. T. Stewart of Lubbock, Texas; and C. B. Andrews of Sonoma, Calif.

SEMINAR ON MEDICAL WRITING FOR REPORTERS

The A. M. A. and the National Association of Science Writers are jointly sponsoring a series of seminars or workshops in medical writing for newspaper reporters. The first conference will be held at the Hotel Syracuse, Syracuse, N. Y., on Thursday and Friday, April 17-18.

Invitations are being mailed to editors of daily newspapers within a 300-mile radius of Syracuse, asking them to send one of their reporters to the meeting. County medical societies in the same area are invited to send a public relations representative.

The purpose of the conferences, which will be held in various sections of the country, is to reach those newspaper writers who work on medical assignments but also handle other duties.

The role of the A. M. A. in the joint conferences was approved by the Board of Trustees some time ago. The National Association of Science Writers, made up of newspaper and magazine reporters who specialize in medical and scientific subjects, has given its wholehearted cooperation to the project.

MEDICAL NEWS

CALIFORNIA

Dr. Golden Honored.—Dr. Ross Golden, visiting professor of radiology at the University of California School of Medicine, Los Angeles, has received the Gold Medal of the American College of Radiology. Dr. Golden, until his retirement last year, was professor of radiology and chief of the department, Columbia University College of Physicians and Surgeons, New York City. In the college's nearly 40-year history, only 18 others have been presented the Gold Medal honor.

Personal.—Dr. Mark Lewis Gerstle Jr. has been appointed psychiatrist in chief-director of special treatment program to the "Youth Authority of the State of California." He assumed his new duties in Sacramento Jan. 27.——Dr. Charles M. Carpenter, professor of infectious diseases and chairman of the department, University of California Medical Center, Los Angeles, was recently awarded a certificate of merit by the National Society for Medical Research "in recognition of vital contributions to public health and welfare made by helping to inform the public of the experimental method underlying the achievements of biological sciences."——Appointment of Dr. Charles E. Smith, dean, School of Public Health, University of California, and president, State Board of Public Health, to the National Advisory Allergy and Infectious Diseases Council was announced March 10 by the Surgeon General of the U. S. Public Health Service.

State Medical Meeting in Los Angeles.—The 87th annual session of the California Medical Association will be held April 27-30 at the Ambassador Hotel, Los Angeles. Dr. Frank A. MacDonald, president of the association, will present an address April 28. The general meetings include a panel discussion on congenital heart disease, moderated by Dr. Forrest H. Adams, Los Angeles; a clinical-pathological conference, moderated by Dr. Donald W. Petit, Pasadena; and a symposium, "Inflammatory Diseases of the Colon," with Dr. William K. Jennings, Santa Barbara, as chairman and including the following sub-topics:

Diverticulitis, Dr. Leon Goldman, San Francisco.
Ulcerative Colitis, Dr. Charles S. Davidson, Boston.
Micrococcic Enterocolitis, Dr. William A. Altemeier, Cincinnati.
Round-Table Discussion.

A motion picture, "Acute Atomic Radiation," will be presented by Lt. Col. Gerald M. McDonnel, M. C., U. S. Army, Washington, D. C. Guest speakers include Drs. Altemeier and Davidson and Drs. Thomas Parran, Pittsburgh; Marcus M. Ravitch, Baltimore; Bronson S. Ray, New York City; Olav E. Hallberg, Rochester, Minn.; Ernst L. Wynder, New York City; and Lt. Col. McDonnel. Scientific exhibits and motion-picture sessions are planned. The president's dinner dance will be held April 29. For information write the California Medical Association, 450 Sutter St., San Francisco 8.

IDAHO

Dr. Carver Appointed Health Administrator.—Dr. Terrell O. Carver, Boise, assumed his duties as State Health Administrator under the State Board of Health on Feb. 1. Dr. Carver fills a position that has been vacant since the new Board of Health was appointed by Governor Robert E. Smylie last year. Prior to coming to Idaho, Dr. Carver was Louisiana State Tuberculosis Control Officer. He served as director of preventive medicine, Idaho Department of Public Health, and for the past several years has been director of the City-County Health Department, Boise, and director of Health Program, Boise City Schools. In his new position, Dr. Carver will also serve as secretary to the State Board of Health and will be in charge of all public health activities in Idaho. Serving under him will be the director of public health and the director of mental health.

KENTUCKY

General Practice Meeting in Louisville.—The seventh annual scientific assembly of the Kentucky Chapter of the American Academy of General Practice will be held April 23-25 at the Brown Hotel, Louisville. Dr. William E. Becknell, president, Kentucky Chapter, and Dr. John S. Harter, vice-president, Kentucky State Medical Association, will present addresses the morning of April 23. About 20 papers are scheduled for presentation including those by the following out-of-state speakers: Drs. James A. Campbell, Chicago; Arthur C. Kerkhof, Minneapolis; John L. Reichert, Chicago; A. Aaron Mintz, Houston, Texas; John M. Howard, Birmingham, Ala.; Arthur C. Curtis, Ann Arbor, Mich.; Charles F. Geschickter, Washington, D. C.; Oscar Creech Jr., New Orleans; George L. Tully Jr., Albany, N. Y.; Richard W. Te Linde, Baltimore; and Harwell Wilson, Memphis, Tenn. Speaker at the annual banquet will be Dr. Austin Smith, editor

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Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

of THE JOURNAL, presenting "The Future for the General Practitioner." Exhibits and a ladies' program are scheduled. Ten hours of formal credit will be given for attendance. For information write the Kentucky Academy of General Practice, 141 W. McMillan St., Cincinnati 19.

MARYLAND

State Faculty Meeting in Baltimore.—The annual meeting of the Medical and Chirurgical Faculty of Maryland will be held April 16-18 at the Alcazar, Baltimore. An illustrated panel discussion, "Medical and Surgical Treatment of Tuberculosis," will be moderated by Dr. Edmund G. Beacham, chief, *Tuberculosis Division*, Baltimore City Hospitals. Dr. Lester R. Dragstedt, chairman, department of surgery, University of Chicago, will present the Ridgeway Trimble Fund Lecture, "A Concept of the Pathogenesis of Gastric and Duodenal Ulcer." Twenty-five topics are scheduled for the round-table luncheon session April 17. The Harvey Grant Beck Memorial Lecture will be given by Dr. Sara M. Jordan, director, department of gastroenterology, Lahey Clinic, Boston, April 18, to be followed by an illustrated clinical-pathological conference. Dr. John S. Eastland will present the presidential message after the presidential dinner. Dr. David B. Allman, president, A. M. A., will speak on "Medical Science: Man's True Glory" at the general meeting. For information write Dr. Everett S. Diggs, 1211 Cathedral St., Baltimore.

MASSACHUSETTS

Program for Technological Writing.—A two-week program for members of publications groups engaged in technological writing for industry and government will be presented at Tufts University in Medford during the last two weeks in July. Enrollment is limited to 25. No formal requirements are set for admission; the goal of the program is to assemble a group with varied backgrounds and common interests who will profit from two five-day weeks of intensive work in technical writing and editing. Participants will be urged to bring with them for discussion nonclassified reports, manuals, or other publications which their companies or agencies have prepared. Paul H. Flint, assistant dean of the Tufts Graduate School will direct the program, and the staff will be drawn chiefly from members of the Boston Chapter of the Society of Technical Writers and Editors. The fee is $150.

Personal.—Dr. Nicholas J. Semenza, of Waltham, received the annual brotherhood award of the Waltham Lodge, B'nai B'rith, at the annual award dinner March 23. Now serving as president of Lions International Club of Waltham, Dr. Semenza served as president of Sacred Heart Holy Name Society in Waltham in 1950-1952; associate editor of Sons of Italy Magazine; member of the executive council, Whittemore School Parent-Teacher Association; and medical director of the Stigmatine Seminary.——Dr. Jacob Furth, associate director of research, Children's Cancer Research Foundation, Boston, has received the 1958 Bertner Foundation award of the University of Texas M. D. Anderson Hospital and Tumor Institute. The award is presented annually "for an outstanding contribution to the field of cancer research." Dr. Furth also presented the Bertner Foundation Lecture, "Radiation Neoplasia and Endocrine Systems."

MICHIGAN

Regulations on Radiation.—State regulations that protect the general public and specialized workers against overexposure to ionizing radiation have been adopted by the state health commissioner, approved by the Council of Health, and made a part of the state administrative code. Dr. Albert E. Heustis, state health commissioner, said the regulations "apply to all persons who receive, possess or use materials or devices capable of emitting ionizing radiation." Industrial, dental, and medical users of radiation materials are covered by the regulations, which will be administered by the Michigan Department of Health. Under the new regulations, all sources of ionizing radiation including x-ray machines must be registered with the state health department. Owners of radiation equipment can obtain registration forms by writing to the Michigan Department of Health, Lansing 4 The new regulations prohibit the use of fluoroscopic shoe fitting machines on persons under 18 years of age. The regulations also created a nine-member radiation committee appointed last week by the state health commissioner to advise the commissioner on radiation protection.

MISSOURI

University News.—Dr. Ward Darley, executive director, Association of American Medical Colleges, Evanston, Ill., has accepted the invitation of the University of Missouri School of Medicine to give the Assembly Lecture sponsored by the School of Medicine. On April 23, 8:00 p. m., in the Auditorium of the Medical Center. Dr. Darley will talk about medical education, the physician-patient relationship, and the art of medicine.

NEW YORK

Dr. Glenn Receives Medical Faculty Award.—Joseph L. Glenn, Ph.D., assistant professor of biochemistry, Albany Medical College, has been named to receive a Lederle Medical Faculty Award. The $22,000 award will be made available to the college's department of biochemistry to support Dr. Glenn's teaching and research projects during the next three years. The Lederle grants are given to "promising" teachers and investigators in the preclinical sciences. They are made by the Lederle Laboratory Division of the American Cyanamid Company. Only one candidate from a medical school is considered for the award in any given year. Dr. Glenn served as a research associate at the Institute for Enzyme Research, Madison, Wis., until his appointment to the Albany Medical College faculty in 1956.

New Meat-Inspection Program.—The Division of Standards and Purchase has announced that it will accept contracts for meat from establishments operating under the State Health Department's new meat inspection program. This is the first time the division has recognized other than federally-inspected meat for use by the state. If the meat producers and packers are otherwise eligible, they can now substitute state inspection for federal inspection. The new program, as outlined in Chapter 18 of the Sanitary Code, went into effect Dec. 16. The regulation sets standards for local meat inspection programs and covers meat not federally inspected. The program provides that all slaughterhouses in health districts conforming to the code must have facilities for the inspection of animals both before and after slaughter. Among the provisions of the regulation are those dealing with sanitation, lighting, ventilation, water supply, sewage, refrigeration, protection of meat against contamination, and removal of refuse.

New York City

Doctors' Benefit Concert.—The Doctors' Orchestral Society of New York will present a benefit concert for the National Cystic Fibrosis Research Foundation on May 22. Physicians, dentists, and members of allied professions are invited to become members. For information write Dr. Benjamin A. Rosenberg, 909 President St., Brooklyn 15, N. Y.

Radiology Training Available.—The City of New York Department of Hospitals has announced that there are several vacancies available for one year of training in radiology, with maintenance and honorarium, for anyone interested in learning radiology as an adjunct to his current specialty. For information write Dr. Henry K. Taylor, Roentgenologist, Goldwater Memorial Hospital, Welfare Island 17, N. Y.

Symposium on Basal Ganglia Surgery.—A three-day symposium on "Basal Ganglia Surgery for Involuntary Movement Disorders," sponsored by the Medical Center, St. Barnabas Hospital, the Sister Elizabeth Kenny Foundation, and its subsidiary, the American Rehabilitation Foundation, will be held at New York University-Bellevue Medical Center May 15-17. Dr. Irving S. Cooper, professor of research surgery in the department of surgery of the university Post-Graduate Medical School and director of the department of neurosurgery at St. Barnabas Hospital, is symposium chairman. Panel speakers include Dr. Traugoot Reichert, professor, Neurochirurgische Klinik der Universitat, Freiberg, Germany. For information and reservation blanks write Miss Dorothy P. Frome, Office of Public Relations, 550 First Ave., New York 16.

NORTH CAROLINA

Kafer Memorial Hospital Changes Name.—Kafer Memorial Hospital of New Bern is now known as the Eastern North Carolina Baptist Hospital. The new administrator, Mr. Parker Morton, comes from Cape Fear Memorial Hospital, Fayetteville. The hospital is a forerunner of what will eventually be a brand new 108-bed unit. As soon as $600,000 has been raised construction will start on a new four-story building. Building is scheduled for completion by 1960.

University News.—The University of North Carolina, Chapel Hill, has announced the receipt of a grant of $8,061 from the Atomic Energy Commission for the purpose of equipping a radiation laboratory in the department of sanitary engineering of the School of Public Health. The laboratory is to be used for research and for teaching graduate students enrolled in programs of study in sanitary engineering, sanitary science, and sanitary chemistry and biology. Information concerning graduate study, assistantships, and fellowships may be obtained from the Department of Sanitary Engineering, P. O. Box 899, Chapel Hill, N. C.

OHIO

Fellowship in Pediatric Renal Research.—A fellowship in renal research will be available beginning July 1 in the department of pediatrics, Western Reserve University School of Medicine. The candidate will be expected to spend about two-thirds of his time in laboratory research and one-third in clinical work with patients under investigation. Salary will be $4,500 to $5,000. Applicants with minimum training of two years in pediatrics will be preferred. Direct correspondence to Dr. Walter Heymann, 2103 Adelbert Rd., Cleveland 6.

OREGON

Gift Enlarges Medical School Campus.—Boundaries of the University of Oregon Medical School campus have been extended to include a 27-acre tract of land as a result of action taken at the January State Board of Higher Education meeting. The acreage came as a gift from the Journal Publishing Company. This property adjoins the Sam Jackson Park tract which comprises most of the present campus of the Medical School and which represents a gift made in 1904 from the Jackson family. With the addition of this tract, the Medical School campus has been increased to 101 acres.

PENNSYLVANIA

Appoint Health Center Study Committee.—Appointment of a special study committee to consider the relationship of the various elements of the University of Pittsburgh Health Center and to recommend methods of establishing more effective liaison has been announced following a recent meeting of representatives of Children's, Elizabeth Steel Magee, Eye and Ear, Presbyterian, and Women's hospitals, Western Psychiatric Institute, the Child Guidance Center of Pittsburgh, and university officials. Named to head the committee was Dr. Thomas Parran, dean of the Graduate School of Public Health. The committee will be charged with the responsibility of designing and directing the study and will bring in a recommendation for any necessary changes in relationships or long-range plans for further development to be presented to the boards of the several institutions by June 30.

Philadelphia

Personal.—Dr. Joseph B. Wolffe, cardiologist, has been given State Department approval to attend the 12th Congress of the International Federation of Sports Medicine in Moscow May 29-June 3. Scientists planning the congress have asked Dr. Wolffe to lecture on his work dealing with the role of physical activity in the treatment and possible control of hardening of the arteries. Dr. Wolffe is founder and medical director of the Valley Forge Heart Hospital and Medical Center and of the Wolffe Clinic and Hospital.

TENNESSEE

Dr. Callison to Be Dean of Medicine.—Dr. Maston K. Callison, Memphis specialist in internal medicine, will assume the office of the dean of the University of Tennessee College of Medicine July 1, succeeding Orren W. Hyman, LL.D., who has been dean of the college since 1925. Dr. Hyman will retain his position as vice-president of the university, in charge of the Medical Units, the title he has held since 1948. Associate professor of medicine, Dr. Callison has served for several years as chief of staff of the City of Memphis Hospitals. He is a diplomate of the American Board of Internal Medicine, member of American College of Physicians, American Heart Association, American Rheumatism Association, and Memphis Academy of Internal Medicine.

Annual State Meeting in Gatlinburg.—The 123rd annual meeting of the Tennessee State Medical Association will be held April 20-23 in Gatlinburg with headquarters at the Civic Auditorium. Specialty societies will meet the afternoons of April 21-23. Two symposiums are planned: "Automobile Accidents," moderated by Dr. Harmon L. Monroe, Erwin, and "Emotional Illnesses," moderated by Dr. Joseph W. Johnson Jr., Chattanooga. A panel discussion, "Management of the Patient with Inoperable Cancer," is planned. Formal presentations at the general sessions will be followed by discussions. Guest speaker at the president's banquet April 21 will be Kenneth McFarland, Ph.D., Topeka, Kan., presenting "Ropes of Gold." A movie, exhibits, and a ladies' program are arranged. For information write the Tennessee State Medical Association, 112 Louise Ave., Nashville 5, Tenn.

WASHINGTON

Symposium on Endocrine Diseases.—The Clinical Society of the Washington Diabetes Association will present the fourth annual Symposium on Metabolic and Endocrine Diseases at the University of Washington School of Medicine, Seattle, April 19. Guest speakers include Dr. Arnold Lazarow, head, department of anatomy, University of Minnesota, Minneapolis, and Dr. Gilbert S. Gordan, associate professor of medicine, University of California, San Francisco. Registration fee is $5. For information write the Washington Diabetes Association, P. O. Box 228, Seattle 11.

WEST VIRGINIA

State Society of Internal Medicine.—The first meeting of the executive committee and council of the West Virginia Society of Internal Medicine, as a state component of the American Society of Internal Medicine, was held in Huntington March 9. District chapters are functioning at Charleston and Huntington and other chapters are planned to cover all sections of the state. The state officers are: Dr. Joseph M. Farrell, Huntington, president; Dr. Pat A. Tuckwiller, Charleston, president-elect; Dr. Rowland H. Burns, Huntington, secretary-treasurer. Council: Drs. Adam B. C. Ellison, and William A Thornhill Jr., Charleston, and William E. Bray Jr., and Walter E. Vest, Huntington. Twenty-seven states are now organized and the remainder are undergoing organization. The objectives of the society are to study the economics of internal medicine and to educate the public as to the aims and importance of the specialty of internal medicine.

WISCONSIN

Poison Information Center.—A Poison Information Center opened at the University Hospitals at Madison on April 7. The 24-hour, year-around service is available to all Wisconsin physicians by calling the hospital, ALpine 6-6811, and asking for the Poison Information Center. The center was set up in the department of pediatrics under Dr. Nathan J. Smith, head of the department. Dr. W. Theodore Bruns, who formerly directed the poison information center of the University of California at Los Angeles, is in charge. Information regarding some 250,000 potentially poisonous substances are available partly by means of a card file supplied and kept up to date by the National Clearinghouse for Poison Control Centers, of the Federal Department of Health, Education and Welfare, and partly by means of a shelf of reference books purchased for the center by the Dane County Medical Society. Furthermore, on call from the center are special consultants in various university departments such as toxicology, pharmacology, pharmacy, biochemistry, botany, mycology, agronomy, and entymology.

ALASKA

Study of Eskimo Nutrition.—A team of food and nutrition specialists is in Alaska working on the first large-scale study of the nutritional status of Alaskan Eskimos, the Public Health Service has announced. Ten native villages will be visited by the team and about 1,000 Eskimos will participate in physical examinations and biochemical studies designed to show how well the native diet meets nutritional requirements. The study will also involve two Eskimo battalions of the Alaskan National Guard. The survey is under the supervision of the Government's Interdepartmental Committee on Nutrition for National Defense. The Public Health Service's Arctic Health Research Center is assisting in the project. The native diet has been under study for the past two years by Dr. Christine Heller, of the research center. Since January, 1956, on request of the governments concerned, similar surveys have been completed in Iran, Pakistan, Korea, the Philippines, Turkey, and Libya as part of the U. S. Mutual Assistance Program. At the request of the Spanish Government, a nutritional survey will be made in that country later this year.

GENERAL

Meeting of Neurological Surgeons.—The 49th meeting of the Society of Neurological Surgeons will be held April 18-19 at Duke University, Durham, N. C. Sixteen papers are scheduled including "Craniopharyngiomas" by Dr. Edgar A. Kahn, president of the society. Other speakers include Charles M. Pomerat, Ph.D., professor of cytology, University of Texas Medical Branch, Galveston, who will present "Recent Advances in the Study of Brain Tissue in Vitro." A movie, "Intimectomy of the Internal Carotid Artery and Carotid Bifurcation in the Neck," will be shown by Dr. Elisha S. Gurdjian. The annual dinner will be held April 18 at the Washington Duke Hotel. For information write Dr. Bronson S. Ray, Secretary, Society of Neurological Surgeons, 525 E. 68th St., New York 21.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories and possessions in the weeks ended as indicated:

	March 15, 1958		
Area	Paralytic Type	Total Cases Reported	March 16, 1957 Total
New England States			
Maine	..	..	..
New Hampshire	..	..	..
Vermont	..	..	..
Massachusetts	..	..	..
Rhode Island	..	..	..
Connecticut	..	..	..
Middle Atlantic States			
New York	..	..	..
New Jersey	..	..	..
Pennsylvania	..	..	2
East North Central States			
Ohio	..	..	..
Indiana	..	..	1
Illinois	..	..	..
Michigan	..	..	2
Wisconsin	..	..	..
West North Central States			
Minnesota	..	..	1
Iowa	..	..	..
Missouri	..	..	1
North Dakota	..	..	..
South Dakota	..	..	..
Nebraska	..	..	1
Kansas	..	..	..
South Atlantic States			
Delaware	..	..	..
Maryland	..	..	..
District of Columbia	..	..	..
Virginia	..	..	1
West Virginia	..	..	..
North Carolina	1	1	1
South Carolina	..	..	..
Georgia	..	..	2
Florida	..	..	4
East South Central States			
Kentucky	..	..	..
Tennessee	..	1	2
Alabama	..	..	..
Mississippi	..	..	..
West South Central States			
Arkansas	..	..	1
Louisiana	..	..	2
Oklahoma	..	..	..
Texas	..	1	5
Mountain States			
Montana	..	..	..
Idaho	..	..	..
Wyoming	..	..	..
Colorado	..	..	1
New Mexico	1	1	..
Arizona	..	..	..
Utah	..	..	1
Nevada	..	..	..
Pacific States			
Washington	..	..	..
Oregon	..	..	2
California	1	1	4
Territories and Possessions			
Alaska	..	..	..
Hawaii	1	1	..
Puerto Rico	..	..	..
Total	4	6	34

Nuclear Medicine Meeting in Dallas.—The third annual meeting of the Southwestern Society of Nuclear Medicine will be held at the Baker Hotel, Dallas, April 12-13. Dr. Jack G. S. Maxfield, president of the society, will present an address April 12. Sixteen papers and the following panel discussions and moderators are scheduled:

Evaluation of Scanning in Clinical Medicine, Dr. Frederick J. Bonte, Dallas.
Responsibilities of the Physician in the Nuclear Age, Dr. James R. Maxfield Jr., Dallas.
Radioiodine-Therapeutic Problems in Thyroid Disease, Dr. Philip C. Johnson, Oklahoma City.

For information write the Southwestern Society of Nuclear Medicine, 2711 Oak Lawn Ave., Medical Center Station, Dallas 19, Texas.

Residency Traineeships in Psychiatry.—The Institute of the Pennsylvania Hospital has established special four-to-five-year traineeships in support of careers in academic psychiatry. These fellowships are designed to offer a broad and integrated training in clinical psychiatry with emphasis on basic and clinical research and research training. The program in basic sciences will be conducted in collaboration with the Institute of Neurological Sciences, School of Medicine, University of Pennsylvania, Philadelphia. Applications from graduates of A. M. A. approved medical schools are invited. The stipends will depend on the applicant's qualification and research experience, and are commensurate with postdoctoral traineeships. For information write the Director of Research, the Institute of the Pennsylvania Hospital, Philadelphia 39.

Railway Surgeons Meeting in Chicago.—The 70th annual meeting of the American Association of Railway Surgeons will be held at the Drake Hotel, Chicago, April 17-19. About 16 papers are scheduled for presentation. A panel discussion, "Anticoagulant therapy," will be moderated by Dr. John H. Olwin, clinical associate professor of surgery, University of Illinois College of Medicine, Chicago, and will include the following members of the University of Illinois faculty: Drs. Oglesby Paul, associate professor of medicine; Norman B. Roberg, associate professor of medicine; William S. Dye Jr., clinical instructor in surgery; and J. L. Koppel, Ph.D., department of surgery. A symposium on "Multiple Injuries" will be moderated by Dr. Raymor Householder, Chicago, on April 18. Movie sessio will be held the afternoon of April 19, and tl annual banquet will be held April 18, 7:30 p. r For information write Dr. Chester C. Guy, Secr tary, American Association of Railway Surgeon 5800 Stony Island Ave., Chicago 37.

Northeast Conference on Mental Health.—An ad dress of welcome by Governor Averell Harrima April 24 will open the meeting of the Northea State Governments Conference on Mental Healt April 23-25 at the Henry Hudson Hotel, New Yor City. Delegates from 10 northeastern states wi convene to discuss aspects of community ment health under the theme, "Perspectives in State Mental Health Programs." Dr. Dale C. Cameron, director of the Division of Mental Health and Medica Care, Minnesota State Department of Public Welfare, will be the principal speaker. Dr. Paul H Hoch, New York State Commissioner of Mental Hygiene, will be the dinner speaker. The conference organized in 1951 to consider mutual problems o community mental health, comprises the states o Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania Rhode Island, and Vermont. Representatives of the federal Department of Health, Education, and Welfare and the Council of State Governments also participate in conference activities.

Awards for University Lecturing and Research.—The 1959-1960 U. S. Government Awards authorized by Public Law 584 (The Fulbright Act), under the auspices of the Board of Foreign Scholarships and the Department of State, for university lecturing and advanced research in Latin America, South and Southeast Asia and the Pacific, and Ireland are open for application. Eligibility requirements are: U. S. citizenship, a year of college or university teaching experience (for lecturing), a doctoral degree or recognized professional standing (for research), and a knowledge of the language of the host country (in some cases). Awards are tenable in one country, usually for an academic year, and payable in currency of the host country. Round trip travel for the grantee (not for family), maintenance allowance, and a small incidental allowance are provided. Closing date for application is April 25. For application and information write the Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Ave., Washington 25, D. C.

Pediatricians Meeting in New York City.—The spring session of the American Academy of Pediatrics will be held April 21-23 at the Hotel Statler, New York City. The program includes the following panel discussions and moderators:

a salute to
medical school progress

MEDICAL EDUCATION
WEEK · · · · April 20-26

Viral Infections Involving the Respiratory Tract, Dr. Horace L. Hodes, New York City.
Recognition and Therapeutic Implications of Heart Disease in Early Infancy, Dr. Sidney E. Blumenthal, New York City.
Aspects of the Care of Newborn and Premature Infants, Dr. Richard L. Day, New York City.
Staphylococcal Infections, Dr. Hattie E. Alexander, New York City.

A symposium, "Recent Studies in Pediatric Neurology," will be moderated by Dr. Sidney Carter, New York City, April 23. Hospital clinics will be conducted at six hospitals the afternoon of April 23. Guest speaker at the April 21 luncheon will be Mr. Bennett Cerf. Exhibits, a ladies' program, and the banquet April 22 are scheduled. For information write the American Academy of Pediatrics, 1801 Hinman Ave., Evanston, Ill.

Obstetricians Meeting in Los Angeles.—The sixth annual meeting of the American College of Obstetricians and Gynecologists will be held April 21-23 at the Hotel Statler, Los Angeles. The presidential address will be delivered by Dr. R. Gordon Douglas. The program includes the following panel discussions and moderators:

Medico-Legal Aspects of Obstetrics and Gynecology, Dr. William B. Thompson, Hollywood, Calif.
Psychosomatic Aspects of Operative Obstetrics and Gynecology, Dr. Allan C. Barnes, Cleveland.
Current Concepts of Obstetrical and Gynecological Endocrinology, Dr. Charles E. McLennan, San Francisco.
Current Trends in Medical Education, Dr. Howard C. Taylor Jr., New York City.
Pediatric Gynecologic Surgery, Dr. Thomas L. Ball, New York City.

Eight research project reports will be presented the afternoon of April 23. Motion-picture sessions, exhibits, breakfast conferences, and 40 round-table discussions are planned. Entertainment includes banquets at the Ambassador Hotel and the Moulin Rouge. Fee for nonfellows is $20. For information write the American College of Obstetricians and Gynecologists, 15 S. Clark St., Chicago 3.

Annual Meeting on Sterility.—The 14th annual meeting of the American Society for the Study of Sterility will be held April 18-20 at the Beverly-Hilton Hotel, Beverly Hills, Calif. The presidential address, "What's 'New' in Infertility—A Look Back," will be presented by Dr. Charles M. McLane, New York City, at the president's luncheon, April 19. The program includes a movie, "Ovulation and Egg-Transport in the Rat," presented by Dr. Richard J. Blandau, Seattle; "Arborization of Cervical Mucus, Nasal Mucus and Saliva," by Dr. Bernard Zondek, Jerusalem, Israel; and a panel discussion, "Endocrine Assays and Their Clinical Application to the Study of Sterility," with Dr. C. Frederic Fluhmann, San Francisco, presiding. Six clinical and laboratory demonstrations are planned at various Los Angeles institutions. The Ayerst Lecture, "Studies on the Mechanism of the Female Genital Function," will be given by Dr. Zondek April 20. Scientific and technical exhibits and breakfast round-table discussions are scheduled. Fee for nonmembers is $5. For information write Dr. Herbert H. Thomas, Secretary, American Society for the Study of Sterility, 920 S. 19th St., Birmingham, Ala.

Physicians Meeting in Atlantic City.—The 39th annual session of the American College of Physicians will be held April 28-May 2, with headquarters at the Convention Hall, Atlantic City, N. J. The president's address, "Fellowship and Citizenship," will be given by Dr. Richard A. Kern at the annual convocation, April 30. The John Phillips Memorial Lecture, "The Disease Spectrum of Human Histoplasmosis," will be given by Dr. Amos Christie, Nashville, Tenn., and the Lilly Lecture, "The Pro- and Antihypertensive Actions of the Kidney," will be presented by Dr. Eduardo Braun-Menendez, Buenos Aires, Argentina. Dr. Jonas E. Salk, Pittsburgh, will give the James D. Bruce Memorial Lecture, "The Immunologic Control of Paralytic Poliomyelitis." Symposiums are planned on influenza, electrolyte problems, radiation hazards, staphylococcal infections, genetics, aeromedical aspects of space flight, practical psychotherapy, and internal medicine. Special features include a concert, the annual banquet May 1, motion-picture sessions, a post-convention tour to Bermuda, and a ladies' program. Panel discussions, color-television medical clinics, and exhibits are planned. For information write Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4.

EXAMINATIONS AND LICENSURE

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES, INC.

Educational Council for Foreign Medical Graduates, Inc.: The American medical qualification examination to be given henceforth twice a year for foreign medical graduates. Medical Schools in the United States and Foreign Countries, Sept. 23. Final date for filing application is June 23. Executive Director, Dr. Dean F. Smiley, 1710 Orrington Ave., Evanston, Illinois.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 17-19. Sec., Dr. D. G. Gill, State Office Building, Montgomery 4.

ARIZONA:* *Examination and Reciprocity.* Phoenix, April 16-18. Exec. Sec., Mr. Robert Carpenter, 826 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, June 5-6. Sec., Dr. Joe Verser, Harrisburg.

California: *Written Examination.* San Francisco, June 16-19; Los Angeles, August 18-21; Sacramento, Oct. 20-23. *Oral Examination.* San Francisco, June 14; Los Angeles, August 16; San Francisco, November 15. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 15; Los Angeles, August 17; San Francisco, November 16. Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

Colorado:* *Examination and Reciprocity.* Denver, June 10-11. Exec. Sec., Mrs. Beulah H. Hudgens, 715 Republic Bldg., Denver 2.

Delaware: *Examination and Reciprocity.* Dover, July 8-10. Sec., Dr. Joseph S. McDaniel, Professional Bldg., Dover.

Florida:* *Examination.* Miami, June 29-July 1. Sec., Dr. Homer L. Pearson, 901 N. W. 17th St., Miami.

Georgia: *Examination and Reciprocity.* Atlanta and Augusta, June. Sec., Mr. C. L. Clifton, 224 State Capitol, Atlanta.

Idaho: *Examination.* Boise, July 14-16. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

Indiana: *Examination.* Indianapolis, June 18-20. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

Iowa:* *Examination.* Iowa City, June 16-18. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines 19.

Kansas:* *Examination.* Kansas City, June 13-14. Sec., Dr. F. J. Nash, New Brotherhood Bldg., Kansas City.

Louisiana: *Examination and Reciprocity.* New Orleans, June 5-7. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

Maryland: *Examination.* Baltimore, June 17-20. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore 1.

Massachusetts: *Examination.* Boston, July 15-18. Sec., Dr. Robert C. Cochrane, Room 37 State House, Boston.

Michigan:* *Examination.* Ann Arbor and Detroit, June 9-11. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

Minnesota:* *Examination.* Minneapolis, April 15-17. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

Missouri: *Examination.* St. Louis, May 30-31. Ex. Sec., Mr. John A. Hailey, Jefferson City.

Nebraska:* *Examination.* Omaha, June. Sec., Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

New Mexico:* *Examination and Reciprocity.* Santa Fe, May 19-20. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

New York: *Examination.* Albany, Buffalo, New York City and Syracuse, June 24-26. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

North Carolina: *Endorsement.* Asheville, May 5. *Examination.* Raleigh, June 16-19. *Endorsement.* Raleigh, June 17. Asst. Sec., Mrs. Louise J. McNeill, Professional Bldg., Raleigh.

North Dakota: *Examination.* Grand Forks, July 9-11. *Reciprocity.* Grand Forks, July 12. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Examination.* June 19-21. Sec., Dr. H. M. Platter, 21 West Broad St., Columbus 15.

Oklahoma:* *Examination.* Oklahoma City, June 3-4. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: *Examination.* Philadelphia and Pittsburgh, July 8-10. Acting Sec., Mrs. Marguerite G. Steiner, Box 911, Harrisburg.

South Dakota:* *Examination.* Rapid City, August 12-13. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

Texas:* *Examination and Reciprocity.* Fort Worth, June 23-25. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

Utah: *Examination.* Salt Lake City, July 9-11. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

Virginia: *Examination.* Richmond, June 12-14. *Reciprocity.* Richmond, June 11. Address: Board of Medical Examiners, 631 First St., S. W., Roanoke.

Washington:* *Examination.* Seattle, July 14-16. Administrator, Mr. Thomas A. Carter, Capitol Bldg., Olympia.

West Virginia: *Examination and Reciprocity.* Charleston, July (date not set). Sec., Dr. N. H. Dyer, State Office Bldg., No. 5, Charleston.

Wisconsin:* *Endorsement.* Madison, April 25. *Examination.* Milwaukee, July 8-10. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., 1 West Wilson St., Madison.

Wyoming: *Examination and Reciprocity.* Cheyenne, June 2. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

Alaska:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

Guam: *Subject to Call.* Act. Sec., Dr. S. F. Provencher, Agana.

Hawaii: *Examination.* Honolulu, July 14-15. Sec., Dr. I. L. Tilden, 1029 Kapiolani St., Honolulu.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: *Examination.* Juneau, Nov. 4. Sec., Dr. R. Harrison Leer, Room 204, Alaska Office Bldg., Juneau.

Arkansas: *Examination.* Little Rock, May 5-6. Sec., Mr. S. C. Dellinger, Zoology Department, University of Arkansas, Fayetteville.

Colorado: *Examination and Endorsement.* Denver, May 7-8. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

Connecticut: *Examination and Endorsement.* New Haven, June 14. Exec. Asst., Mrs. Regina G. Brown, 258 Bradley St., New Haven 10.

District of Columbia: *Examination.* Washington, Apr 14-15. Deputy Director, Commission on Licensure, M Paul Foley, 1740 Massachusetts Ave., N. W., Washington

Florida: *Examination.* Miami, June 7. Sec., Mr. M. W Emmel, Box 340, Gainesville.

Kansas: *Examination.* Kansas City, June 3-4. Sec., Dr. R. E Stowell, University of Kansas School of Medicine, Kansa City 12.

New Mexico: *Examination.* Santa Fe, April 20. *Reciprocity* Santa Fe, March 26. Sec., Mrs. Marguerite Cantrell, Bo 1522, Santa Fe.

South Dakota: *Examination.* Vermillion, June 6-7. Sec. Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Rhode Island: *Endorsement.* Providence, April 30. *Examination.* Providence, May 14. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Offic Bldg., Providence.

Texas: *Examination.* April 18-19, Austin, Galveston an Houston. Sec., Bro. Raphael Wilson, 407 Perry Brook Bldg., Austin.

Wisconsin: *Examination.* Milwaukee, June 7. Sec., Mr William H. Barber, 621 Ransom St., Ripon.

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*Basic Science Certificate required.

GOVERNMENT SERVICES

DEPARTMENT OF DEFENSE

Virchow Centennial at Armed Forces Institute of Pathology.—The centennial of the publication of Rudolph Virchow's "Cellular Pathology" is being celebrated throughout 1958 by the Armed Forces Institute of Pathology, Washington, D. C. The celebration program began March 3 with the first of a series of five daily lectures presented that week in Dart Auditorium. The scientific public was invited to attend these lectures. Other lectures in the series will be announced at suitable intervals.

Virchow's "Cellular Pathology," which first proclaimed a unified concept of cells as self-reproducing biological entities, was composed of a series of lectures which he gave in Berlin during 1858. Therefore, lectures from time to time at the Institute will stress specific applications to cellular pathology of current research in cytology, such as might be represented by histochemistry, biophysics, light and electron microscopy, tissue culture and virology, nutrition, immunology, ionizing radiation, tumors, and chemotherapy.

ATOMIC ENERGY COMMISSION

AEC Awards Research Contracts.—The U. S. Atomic Energy Commission has awarded 51 unclassified life science research contracts in the fields of medicine, biology, environmental sciences, radiation instrumentation, and special training. The contracts were awarded to universities and private institutions as part of the Commission's policy of assisting research and development in fields related to atomic energy as specified in the Atomic Energy Act of 1954, and as amended in 1956. Fifty contract renewals for one year each were awarded to allow for continuation of research already in progress. Twenty-one of these are in medical sciences, 23 in biology, 2 in environmental sciences, and 4 in radiation instrumentation.

NAVY

Training Course for Inactive Reservists.—A 14-day active duty training course in disease vector and economic pest prevention and control is available to inactive Reserve officers and enlisted medical department personnel beginning on the first Monday of April and June and the third Monday of May, 1958, at the Naval Disease Vector Control Center, Jacksonville, Fla.

Medical department Reservists from the First, Third, Fourth, Fifth, Sixth, Eighth, and Ninth Naval Districts are eligible, within funds available, for this training. Security clearance is not required. Interested eligible Reservists should submit their request to the Commandant of their home Naval District at the earliest practicable date.

Retired Officers.—The following U. S. Naval medical officers were placed on the retired list on March 1, 1958:

Rear Adm. Robert M. Gillett, after more than 34 years active service.
Capt. Charles W. Steele, more than 30 years active service.
Capt. George C. Thomas, more than 21 years active service.
Capt. Karl J. Palmberg, more than 20 years active service.
Capt. Jefferson Davis, more than 20 years active service.
Capt. David W. Sherwood, 16 years active service.

Personal.—Rear Adm. Bartholomew W. Hogan, surgeon general of the Navy, has been elected president of the Army and Navy Club of Washington, D. C. This is said to be the first time in the history of this 73-year-old club that a medical officer has been elected president.

VETERANS ADMINISTRATION

New Division on Research on Aging.—A new division of the Department of Medicine and Surgery in Washington, D. C., will conduct research in aging, survey the possibilities for research in retarding physical or mental deterioration, and coordinate the numerous studies of disorders associated with aging that are already under way in VA hospitals.

Dr. Charles C. Chapple, who will head the new division, said chemical, nutritional, psychological, biophysical, social, and clinical aspects will be considered, as these affect the individual.

The program will be developed under guidance of an advisory committee on problems of aging, comprising Ralph W. Gerard, M.D., professor of neurophysiology, Mental Health Research Institute, University of Michigan, chairman of the committee; Wendell H. Griffith, M.D., chairman, department of physiological chemistry, University of California School of Medicine; Eugene M. Landis, M.D., George Higginson professor of physiology, Harvard Medical School; Albert I. Lansing, Ph.D., chairman, department of anatomy, University of Pittsburgh School of Medicine; and William D. Stroud, M.D., professor of cardiology, Graduate School of the University of Pennsylvania.

PUBLIC HEALTH SERVICE

Many States Act to Increase Mental Health Services.—Dr. Robert H. Felix, director, National Institute of Mental Health, has reported an increase in mental health services over the United States as a result of laws passed by state legislatures in 1957. California, Minnesota, New Jersey, and Vermont passed laws providing grants-in-aid to localities for community mental health clinics, services for emotionally disturbed and mentally retarded children, rehabilitative and aftercare programs, alcoholism control programs, and public education on mental health.

These laws resemble the first legislation of this kind which was passed in New York in 1954, providing state grants on a dollar for dollar basis to help communities start new mental health programs or expand existing services. Connecticut, Pennsylvania, Indiana, Tennessee, and Florida passed grant-in-aid mental health legislation in 1955 and 1956. Laws authorizing counties to levy taxes or appropriate funds to support local mental health centers or clinics were passed by Iowa, Kansas, and South Dakota during 1957. Many states took steps to modernize their laws in regard to the commitment, detention and care, and treatment of the mentally ill. These included California, Colorado, Kansas, Minnesota, Montana, North Dakota, and Texas.

Connecticut, Maine, Minnesota, New Hampshire, Oregon, Rhode Island, and West Virginia took legislative action which ratified the Interstate Compact on Mental Health. This interstate agreement, first issued in 1955, makes the patient's welfare the cardinal consideration in deciding whether he shall be kept in one state or sent to another. Other states now participating in the Compact are Massachusetts, New Jersey, and New York.

Arkansas, Nebraska, and Texas authorized the construction of new institutions for care and treatment of the mentally retarded. Idaho and Minnesota made it mandatory for local school districts to provide instruction for handicapped children. A diagnostic and training center for the mentally retarded will be established in the state of Washington. New York is now developing plans for a state research institution on mental retardation.

In the state of Washington, a resident treatment center for emotionally disturbed children is being established at Western State Hospital where research as well as treatment will be carried on. Minnesota authorized a resident treatment center for emotionally disturbed children. In California, the Youth Authority is initiating a special program of intensive treatment in two institutions for juvenile delinquents.

Texas is planning to set up a new community hospital near the Texas Medical Center in Houston for training and research in mental illness. Iowa instituted a Mental Health Research Fund. A research program in alcoholism was established at the College of Medicine of Ohio State University. North Dakota directed the Medical Center of the University of North Dakota to encourage the training of psychiatric personnel for staffing the mental health agencies of the state and also provided training stipends.

Cancer Research.—The Public Health Service has announced a $229,481 contract with the Battelle Memorial Institute, Columbus, Ohio, to test chemicals and antibiotic filtrates as possible agents for use against cancer. The contract provides that the chemicals and antibiotic filtrates selected be used against three forms of cancer in mice, namely, leukemia, breast cancer, and a tumor of the connective tissue. In addition to searching for new agents to treat cancer, the Battelle Institute will seek improved methods for testing compounds, and will perform toxicity tests on antibiotic culture filtrates. If worthwhile and safe for humans, chemicals found through such work will be made available for studies in hospitals and clinics cooperating in a national cancer chemotherapy program.

Other laboratories now doing work on chemicals against cancer under similar contracts are Microbiological Associates, Bethesda, Md.; Wisconsin Alumni Research Foundation, Madison; Southern Research Institute, Birmingham, Ala.; Hazelton Laboratories, Falls Church, Va.; Stanford Research Institute, Menlo Park, Calif.; Arthur D. Little, Inc., Cambridge, Mass.; and Armour Research Foundation, Illinois Institute of Technology, Chicago. In addition to the National Cancer Institute, sponsors of the national chemotherapy research program include the American Cancer Society, the Damon Runyon Memorial Foundation, the Veterans Administration, the Atomic Energy Commission, and the Food and Drug Administration.

Research on Psychoactive Drugs.—Drugs that affect the brain and central nervous system are being studied in 79 research projects in mental hospitals, universities, and other research institutions throughout the United States, under the sponsorship of the National Institute of Mental Health of the Public Health Service. Grants for these projects total $1,685,219.

Most prominent among the studies being supported are clinical evaluations of drug effectiveness in schizophrenia, emotional disturbances of childhood, depressive states, and the neuroses. Other investigations being supported deal with (1) the effects of drugs on psychological functions; (2) the effects of drugs on animal behavior; (3) the effects of drugs on brain function; (4) the biochemical mechanisms of drug action; and (5) synthesis of new compounds.

Research Grants Awarded.—During February research grants and fellowships totaling $5,423,472 were awarded by the National Institutes of Health, Bethesda, Md. Scientists and institutions throughout the nation received 241 grants totaling $4,534,399 to support research in medical and related sciences. The fellowships support research training of students in medical, dental, nursing, and public health schools; candidates for master's and doctorate degrees in the biological sciences; and research scientists at various levels of training following receipt of the doctorate.

DEATHS

Cantor, William, Brooklyn; St. Louis University School of Medicine, 1925; associated with Maimonides Hospital; died Feb. 6, aged 58, of coronary thrombosis.

Cesteros, Jose Negron, New York City; Howard University College of Medicine, Washington, D. C., 1923; member of the Medical Society of the State of New York; associated with Park East and Manhattan General hospitals; died Feb. 8, aged 61, of coronary thrombosis.

Cole, Thomas Jonathan, Chicago; Howard University College of Medicine, Washington, D. C., 1928; died Feb. 17, aged 55, of portal cirrhosis with esophageal varices.

Elliott, John Robert ⊕ St. Joseph, Mo.; Ensworth Medical College, St. Joseph, Mo., 1903; veteran of World War I; died in the Veterans Administration Hospital in Wadsworth Jan. 10, aged 84, of arteriosclerosis.

Eneboe, Paul Leo ⊕ Bozeman, Mont.; University of Minnesota Medical School, Minneapolis, 1932; certified by the National Board of Medical Examiners; veteran of World War II; served as second vice-president of the Montana Tuberculosis Association; past-president of the staff of the Deaconess Hospital, where he died Jan. 9, aged 50, of coronary thrombosis.

Ericson, Charles E. ⊕ Quincy, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; associated with the Blessing Hospital, where he died Feb. 5, aged 78, of arteriosclerotic heart disease.

Fallows, Howard Daniel ⊕ Mason City, Iowa; State University of Iowa College of Medicine, Iowa City, 1905; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; died in Tucson, Ariz., Dec. 27, aged 74, coronary occlusion with myocardial infarction and arteriosclerotic heart disease.

Farr, Eri Madison ⊕ Billings, Mont.; Medico-Chirurgical College of Philadelphia, 1908; specialist certified by the American Board of Preventive Medicine; member of the American Academy of General Practice and the Industrial Medical Association; served as county health officer; associated with the Billings Deaconess Hospital and St. Vincent's Hospital, where he was past-president of the staff; Civil Aeronautics Administration examiner; died in La Mesa, Calif., Feb. 9, aged 74, of heart disease.

Flake, Minna Margareta, New York City; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1915; member of the Medical Society of the State of New York; died in the Beekman-Downtown Hospital Feb. 10, aged 71.

Fritsch, Louis Ernest ⊕ Indianapolis; Medical College of Ohio, Cincinnati, 1903; formerly practiced in Evansville, Ind., serving as president of the Vanderburgh County Medical Society and member of the board of health; veteran of World War I; died in the Methodist Hospital Jan. 20, aged 78, of burns received when he accidentally set fire to a chair while smoking.

Frolkis, Nathan Pinchos, Augusta, Ga.; Western Reserve University School of Medicine, Cleveland, 1936; service member of the American Medical Association; associated with the Veterans Administration Hospital, where he died Jan. 14, aged 45, of bronchogenic carcinoma.

Gale, Louis Harry ⊕ Erie, Pa.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1925; died Jan. 18, aged 57.

Gallagher, Henry Joseph ⊕ Providence, R. I.; Tufts College Medical School, Boston, 1917; veteran of World War I; on the staff of the Rhode Island, Charles V. Chapin, Roger Williams General, and Providence Lying-In hospitals; died in Akron, Ohio, Jan. 16, aged 66, of arteriosclerotic heart disease and bronchopneumonia.

Gants, Robert Tuthill ⊕ Colonel, U. S. Army, Downs, Kan.; born in Cawker City March 14, 1905; University of Kansas School of Medicine, Kansas City, Kan., 1930; service member of the American Medical Association; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; adjunct clinical professor of surgery at the George Washington University School of Medicine in Washington, D. C.; entered the U. S. Army in 1934; served in the Philippines and at various military hospitals in this country until World War II, during which time he commanded station hospitals in France and Germany and received the Bronze Star, the Legion of Merit, and the Army Commendation Ribbon; chief of surgery, William Beaumont Army Hospital, El Paso, Texas;

⊕ Indicates Member of the American Medical Association.

served as chief of surgery at the Walter Reed Army Hospital, Washington, D. C., where he died Feb. 15, aged 52, of carcinoma with multiple metastases.

Gaul, Julian Allen, Roxbury, N. Y.; Albany (N. Y.) Medical College, 1898; member of the Medical Society of the State of New York; county coroner; associated with the Aurelia Osborn Fox Memorial Hospital in Oneonta; died in the Margaretville (N. Y.) Hospital Jan. 30, aged 81, of pneumonia.

Georgetson, Socrates John, Pittsburgh; University of Pittsburgh School of Medicine, 1930; member of the American Academy of Dermatology and Syphilology; veteran of World War I; member of the staff of the Allegheny General Hospital; died Jan. 26, aged 57.

Giordano, Alfred Sabato ⊕ Sarasota, Fla.; born in Avellino, Italy, Feb. 3, 1893; Syracuse University College of Medicine, 1920; specialist certified by the American Board of Pathology; certified by the National Board of Medical Examiners; from 1945 to 1951 member of the House of Delegates of the American Medical Association and served as vice-chairman of the Section on Pathology and Physiology; member and for many years secretary-treasurer of the American Society of Clinical Pathologists; member of the American Association of Pathologists and Bacteriologists and the College of American Pathologists; entered the Mayo Foundation, Rochester, Minn., as a fellow in pathology in July, 1920; left in December, 1922; served on the staffs of the Elkhart (Ind.) General Hospital and Memorial and St. Joseph's hospitals in South Bend, Ind.; member of the board of editors of the *American Journal of Clinical Pathology;* died Feb. 15, aged 65, of coronary thrombosis.

Giragosian, Vahan H. J., Omaha; Reliance Medical College, Chicago, 1909; died in the Douglas County Hospital Dec. 20, aged 81, of arteriosclerotic heart disease with coronary insufficiency.

Goll, Alfred George, Stryker, Ohio; Northwestern University Medical School, Chicago, 1899; for many years member of the school board; a director of the Farmers State Bank; died in the Cameron Hospital, Bryan, Jan. 25, aged 85.

Gotwals, John Elmer ⊕ Phoenixville, Pa.; born in Yerkes Oct. 17, 1882; University of Pennsylvania School of Medicine, Philadelphia, 1911; for many years a member of the board of health of Phoenixville; served the community as school physician; at one time third vice-president of the Medical Society of the State of Pennsylvania and president of the Montgomery County Medical Society; veteran of World War I; his work in Boy Scouting won him the Silver Beaver Award for outstanding service to youth; for many years chief of surgery at the Phoenixville Hospital, where he died Feb. 7, aged 75, of carcinoma of the pancreas with metastasis to the lungs.

Graham, James Barnett, Jameson, Mo.; Barnes Medical College, St. Louis, 1897; on the staff of the Missouri Methodist Hospital, St. Joseph, where he died Jan. 12, aged 84, of arteriosclerotic heart disease and left bundle branch block.

Green, Austin L. ⊕ Milford, Ill.; Northwestern University Medical School, Chicago, 1907; associated with the Iroquois Hospital in Watseko, where he died Jan. 23, aged 88, of acute pericarditis and pneumonia.

Groehl, Henry Michael, Monterey, Mass.; Columbia University College of Physicians and Surgeons, New York City, 1895; an associate member of the American Medical Association; member of the Medical Society of the State of New York; died in Great Barrington Feb. 3, aged 85, of pneumonia.

Grotz, John George, Buffalo; University of Buffalo School of Medicine, 1914; an associate member of the American Medical Association; veteran of World War I; on the staff of the Lafayette General Hospital, where he died Jan. 20, aged 71, of heart disease and diabetes mellitus.

Gui, Weston Arch, Evanston, Ill.; Northwestern University Medical School, Chicago, 1951; interned at Evanston (Ill.) Hospital; served a residency at the Veterans Administration Hospital in Downey, Ill., and the Veterans Administration of the West Side Hospital, Chicago; served in the medical corps of the U. S. Army Reserve; service member of the American Medical Association; was shot and killed by a patient Jan. 31, aged 37.

Gustin, Genevieve ⊕ Jacksonville, Fla.; Woman's Medical College of Pennsylvania, Philadelphia, 1903; died Dec. 23, aged 78, of pyelonephritis and postradiation carcinoma of the cervix.

Gustin, Walter Sebre, Enfield, N. H.; University of Vermont College of Medicine, Burlington, 1897; died in Everett, Mass., Jan. 12, aged 83, of arteriosclerotic heart disease.

Hansen, John Robert, Santa Monica, Calif.; College of Medicine and Surgery, Chicago, 1910; died Jan. 17, aged 74, of coronary occlusion, and diabetes mellitus.

Hanson, Samuel, Stockton, Calif.; University of California School of Medicine, San Francisco, 1923 an associate member of the American Medical Association; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; died Jan. 18, aged 61, of myocardial infarction.

argreaves, James H. ⊕ Conshohocken, Pa.; Temple niversity School of Medicine, Philadelphia, 1911; the courtesy staff of Sacred Heart Hospital, orristown, where he died Feb. 11, aged 68, of ute myocardial infarction.

awn, Chester Ellsworth, Temple City, Calif.; ahnemann Medical College and Hospital of hiladelphia, 1920; died Feb. 6, aged 67, of coroary heart disease.

euschele, William Henry, San Jose, Calif.; Ensorth Medical College, St. Joseph, Mo., 1910; an ssociate member of the American Medical Assoiation; for many years resident physician for the alifornia State Athletic Commission; died Jan. 0, aged 73.

orowitz, Israel S., New York City; Columbia niversity College of Physicians and Surgeons, ew York City, 1903; died in the Mount Sinai Hosital Feb. 1, aged 77.

ullsiek, Richard Benjamin, St. Paul; University f Minnesota Medical School, Minneapolis, 1924; ervice member of the American Medical Associaion; veteran of World Wars I and II; chief medcal officer, Veterans Administration Center; died eb. 1, aged 59, of coronary thrombosis.

Huntington, Robert Howard ⊕ Fayetteville, Ark.; tlanta College of Physicians and Surgeons, 1905; ssociated with Fayetteville City Hospital and Washington County Hospital; died Jan. 28, aged 78, of bronchopneumonia.

Kautz, Friedrich Gottfried ⊕ New York City; born in Berlin, Germany, Jan. 29, 1889; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1912; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; formerly on the faculty of Cornell University Medical College; at one time director of radiology at the Desert Sanatorium of Southern Arizona in Tucson; director of radiology and roentgenology at the Knickerbocker Hospital; died Feb. 5, aged 69, of pulmonary fibrosis.

Kelly, Frank Lewis, Berkeley, Calif.; born in Oakland in 1884; University of California School of Medicine, San Francisco, 1912; member of the American Public Health Association, the California Academy of Medicine, the Sigma Xi and Delta Omega honor societies, the Delta Tau Delta fraternity, and other professional organizations; for many years on the faculty of the University of California; director of public health in Berkeley from 1923 to 1954; at one time associated with the state department of health; served on the board of directors of the Children's Hospital of the East Bay in Oakland; died in the Alta Bates Hospital Jan. 21, aged 73, of arteriosclerosis.

Kimball, Stockton ⊕ Buffalo; born in Buffalo Aug. 17, 1902; University of Buffalo School of Medicine, 1929; dean and assistant professor of medicine at his alma mater; treasurer of the Association of American Medical Colleges; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Gastroenterological Association, Buffalo Academy of Medicine, American Society of Tropical Medicine, American Association for the Advancement of Science, American Malaria Society, Alpha Omega Alpha honorary fraternity, Sigma Xi scientific society, and Nu Sigma Nu medical fraternity; associated with Edward J. Meyer Memorial and Millard Fillmore hospitals, and Buffalo General Hospital, where he died Feb. 7, aged 55, of staphylococcic septicemia.

Kirkwood, George MacDonald, Syracuse, N. Y.; Syracuse University College of Medicine, 1938; veteran of World War II; died Jan. 25, aged 44.

Laferty, John Marshall ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1912; veteran of World War I; director of obstetrical and gynecological service, St. Mary's Hospital, where he died Feb. 10, aged 67, of cerebrovascular accident and carcinoma of the bladder.

Lehrman, Philip Raphael ⊕ New York City; born in Russia Oct. 12, 1895; Fordham University School of Medicine, New York City, 1918; clinical professor of psychiatry at New York University College of Medicine and the New York University Post-Graduate Medical School; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychoanalytic Association, American Psychosomatic Society, and the American Psychiatric Association; past-president of the New York Psychoanalytic Institute and Society; associated with the University Hospital; served on the staff of the Manhattan State Hospital; died Feb. 4, aged 62, of coronary thrombosis.

Lenz, Dorsey Soren, Big Fork, Mont.; Northwestern University Medical School, Chicago, 1922; fellow of the American College of Surgeons; served as health officer of Campbell County, Wyo.; associated with the Campbell County Memorial Hospital in Gillette; died in Gillette Feb. 2, aged 64, of coronary occlusion.

Light, John Joseph ⊕ Lebanon, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; specialist certified by the American Board of Radiology; member of the American College of Radiology; served as county coroner, deputy coroner, and county treasurer; associated with the Good Samaritan Hospital; died Feb. 2, aged 84, of myocardial infarction.

Littman, Sidney, Santa Barbara, Calif.; Western Reserve University School of Medicine, Cleveland, 1918; for many years practiced in Cleveland, where he was associated with the Mount Sinai Hospital; died Jan. 19, aged 67.

Livermore, Denny Wood ⊕ Foxboro, Mass.; Boston University School of Medicine, 1906; for many years school physician and town physician; associated with Foxboro State Hospital; died Jan. 15, aged 85, of heart disease.

Lombardi, Nicholas Thomas, Amsterdam, N. Y.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1920; an associate member of the American Medical Association; past-president of the Montgomery County Medical Society; associated with Amsterdam Hospital and St. Mary's Hospital, where he died Jan. 16, aged 74, of coronary insufficiency.

McGowan, Donald Oscar ⊕ Carmichael, Calif.; University of Oregon Medical School, Portland, 1934; member of the American Academy of General Practice; veteran of World War II; burned to death in his car Feb. 3, aged 50.

Madden, Owen Michael ⊕ Buffalo; Queen's University Faculty of Medicine, Kingston, Ontario, Canada, 1919; served overseas during World War I; for many years on the staff of the Lafayette General Hospital, where he was vice-president of the board of directors, and where he died Jan. 30, aged 68, of cardiac failure.

Mansifee, William H., St. Louis; Chicago Homeopathic Medical College, 1889; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1893; at one time public school hygiene inspector; an organizer of the Provident Hospital which later became Peoples Hospital; died Feb. 7, aged 93.

Mason, Claude Hutchinson ⊕ El Paso, Texas; Maryland Medical College, Baltimore, 1911; specialist certified by the American Board of Radiology; member of the American College of Radiology; veteran of World War I and received the Distinguished Service Cross, Legion of Honor, and the Croix de Guerre with Palm and Star; associated with the Federal Correctional Institution Hospital in La Tuna, and the Hotel Dieu Hospital, where he died Jan. 13, aged 72, of metastatic carcinoma of the lungs, skin, and hands.

Morris, Louis C. ⊕ Chicago; Rush Medical College, Chicago, 1928; assistant professor of medicine at Northwestern University Medical School; specialist certified by the American Board of Internal Medicine; member of the American College of Chest Physicians and the American Trudeau Society; veteran of World War II; associated with Cook County and Grant hospitals, and the Weiss Memorial Hospital, where he died Feb. 23, aged 57, of myocardial infarction.

O'Neil, James Charles ⊕ Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1917; served on the faculty of his alma mater; specialist certified by the American Board of Psychiatry and Neurology; fellow of the American Psychiatric Association; veteran of World War II; formerly member of the staff of the Vermont State Hospital in Waterbury, where he was superintendent from 1936 to 1944; assistant superintendent of the Brattleboro (Vt.) Retreat, from 1947 to 1949; died in the De Goesbriand Hospital Jan. 23, aged 73, of cancer.

Paryzek, Harry Vincent ⊕ Cleveland; born in Cleveland Jan. 11, 1892; Western Reserve University School of Medicine, Cleveland, 1915; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians, member of the House of Delegates of the American Medical Association from 1942 to 1945; served as secretary-treasurer and president of the Cleveland Academy of Medicine, which in 1950 gave him its award for distinguished service to the profession and community; past-president of the Ohio State Medical Association; at one time on the faculty of his alma mater; served overseas during World War I; member of the Cleveland Medical Library Board, associated with St. Alexis Hospital; died Jan. 20, aged 66, of cardiac hypertrophy and ventricular fibrillation.

Patterson, Benjamin Howard, Bay Pines, Fla.; University of Pittsburgh School of Medicine, 1900, veteran of World War I; died in the Veterans Administration Center Dec. 19, aged 81, of arteriosclerotic heart disease.

Pavy, Odra S. ⊕ Laramie, Wyo.; University of Cincinnati College of Medicine, 1922; retired Union Pacific Railroad surgeon; associated with the Ivinson Memorial Hospital; died Jan. 21, aged 71, of arteriosclerosis and cardiac failure.

Roberts, Elisha Houston, Corsicana, Texas; University of Oklahoma School of Medicine, Oklahoma City, 1916; died in Veterans Administration Center, Temple, Nov. 8, aged 65.

Robinson, William Briscoe, Los Angeles; Medical College of Ohio, Cincinnati, 1896; died Jan. 22, aged 90.

Roddy, John Augustus ⊕ Oklahoma City, Okla.; Jefferson Medical College of Philadelphia, 1907; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; at one time on the faculty of his alma mater; associated with St. Anthony's Hospital; died Jan. 1, aged 73, of coronary occlusion.

Rohrer, William M., Springtown, Texas; University Medical College of Kansas City, Mo., 1907; died in the All Saints Hospital, Fort Worth, Dec. 15, aged 72.

Rossman, Morris Munice ⊕ Freeport, N. Y.; Syracuse University College of Medicine, 1934; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; veteran of World War II; served on the staffs of University Hospital in New York City and the South Nassau Communities Hospital in Oceanside; associated with Doctors Hospital, where he died Feb. 3, aged 48, of injuries received in an automobile accident.

Rupp, William A. ⊕ Chicago; Northwestern University Medical School, Chicago, 1900; associated with the South Shore Hospital; died in the Veterans Administration Hospital in Hines, Ill., Feb. 4, aged 81, of coronary arteriosclerosis.

Sakin, Benjamin M. ⊕ Brooklyn; Fordham University School of Medicine, New York City, 1917; member of the staff of the Brooklyn Jewish Hospital; medical columnist for the Jewish Daily Forward; died Feb. 17, aged 71, of a heart attack.

Schantz, John Philip, Schuylkill Haven, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1946; interned at the Sacred Heart Hospital in Allentown; served in the Korean War; formerly a resident physician at the Charles H. Miner Sanatorium in Hamburg; on the staff of the Pottsville (Pa.) Hospital; member of the American Trudeau Society; died Jan. 27, aged 37, of myocardial infarction.

Schier, Anton Robert, Dallas, Texas; Gross Medical College, Denver, 1893· veteran of World War I; formerly an officer in the regular U. S. Navy; at one time medical superintendent of the State Hospital for Epileptics and School for Feebleminded at Woodward, Iowa; died Nov. 12, aged 82.

Schweninger, Edward A., St. Louis; Washington University School of Medicine, St. Louis, 1907; for many years associated with the City Hospital, where he died Feb. 4, aged 79.

Sealy, Albert Henry ⊕ Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1912, associated with Mercy and St. Ann's hospitals and the Grant Hospital, where he died Jan. 15, aged 75, of pneumonia.

Shepard, George Wanzor ⊕ Captain, U. S. Navy, retired, Vallejo, Calif.; born June 11, 1878, Western Reserve University Medical Department, Cleveland, 1903; service member of the American Medical Association; fellow of the American College of of Surgeons; appointed assistant surgeon in the Navy with the rank of lieutenant (jg) in 1907; during World War I served aboard two naval ships and at the Naval Training Station, Norfolk, Va.; from 1935 to 1937 served with the Marine Detachment, American Legation, Peiping, China; attained the rank of captain in 1929; reaching the statutory age for retirement in 1942, was placed on the retired list after more than 35 years naval service; died in the U. S. Naval Hospital, Oakland, Feb. 3, aged 79.

Sherman, Relza Newton ⊕ Bradenton Beach, Fla.; University of Tennessee College of Medicine, Memphis, 1913; member of the Michigan State Medical Society: specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; formerly practiced in Bay City, Mich., where he was associated with the Mercy and General hospitals; died Jan. 16, aged 70.

Shrum, Riley, Los Angeles; University of Louisville (Ky.) Medical Department, 1898; died Jan. 29, aged 83.

Simon, Frederick ⊕ New York City; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1915; died Dec. 30, aged 69, of a heart attack.

Smith, Charles Hervey, Uniontown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; an associate member of the American Medical Association; fellow of the American College of Physicians; veteran of World War I; associated with Uniontown Hospital; died Jan. 20, aged 90, of arteriosclerotic heart disease.

Smith, Conrad, St. Petersburg, Fla.; Boston University School of Medicine, 1899; professor emeritus of laryngology at his alma mater; fellow of the American College of Surgeons; died Dec. 19, aged 84, of coronary occlusion, and arteriosclerosis.

Smith, Herbert Beekman, Corning, N. Y.; University and Bellevue Hospital Medical College, New York City, 1899; an associate member of the American Medical Association; on the staff of Corning Hospital; formerly county coroner; died in St. Joseph's Hospital, Elmira, Jan. 30, aged 81.

Smith, Robert Benjamin ⊕ Akron, Ohio; Ohio State University College of Medicine, Columbus, 1940; specialist certified by the American Board of Internal Medicine; member of the American College of Allergists; on the staff of St. Thomas Hospital; died Feb. 2, aged 42.

Stanbery, Albert Russel, Vandalia, Ill.; St. Louis College of Physicians and Surgeons, 1909; died in the Fayette County Hospital Dec. 6, aged 82, of acute yellow atrophy of the liver and arteriosclerosis.

Steinman, William ⊕ Miami, Fla.; born in Chicago Sept. 19, 1916; University of Illinois College of

Medicine, Chicago, 1941; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; clinical assistant professor of ophthalmology at the University of Miami School of Medicine in Coral Gables; president of the Dade County Eye, Ear, and Nose Society; veteran of World War II; associated with the Mount Sinai Hospital in Miami Beach, and Mercy and Jackson Memorial hospitals; formerly practiced in Chicago; died Feb. 10, aged 41, of a heart attack.

Stewart, William Lloyd ⊕ Mediapolis, Iowa; State University of Iowa College of Medicine, Iowa City, 1907; associated with the Burlington (Iowa) Hospital, where he died Dec. 27, aged 71.

Stilson, George Doremus, Long Beach, Calif.; Cornell University Medical College, New York City, 1908; an associate member of the American Medical Association; member of the American Urological Association; specialist certified by the American Board of Urology; past-president of the Long Beach Branch of the Los Angeles County Medical Society; past-president of the Los Angeles County Urological Society; associated with Seaside, St. Mary's, and Community hospitals; died Jan. 22, aged 71, of cancer.

Stofer, Er Stanton, Kansas City, Mo.; University Medical College of Kansas City, Mo., 1910; veteran of World War I; died Feb. 15, aged 71.

Stover, John Franklin ⊕ Doe Hill, Va.; University College of Medicine, Richmond, 1912; staff member, King's Daughters Hospital in Staunton; died Jan. 12, aged 76, of coronary occlusion.

Strausbaugh, James Nelson ⊕ Meadville, Pa.; Western Reserve University School of Medicine, Cleveland, 1930; member of the American Academy of General Practice; charter member of the staff of Spencer Hospital; died in the Arnot Ogden Memorial Hospital, Elmira, Jan. 24, aged 53, of acute hemorrhagic pancreatitis.

Strauss, Maurice Jacob ⊕ New Haven, Conn.; born in New Haven Jan. 3, 1893; Columbia University College of Physicians and Surgeons, New York City, 1917; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; clinical professor emeritus of dermatology at Yale University School of Medicine; director of venereal disease bureau, New Haven Health Department, 1922-1946; veteran of World War I; associated with the Grace Hospital, Hospital of St. Raphael, and New Haven hospitals; consultant, Laurel Heights State Tuberculosis Sanatorium in Shelton, Veterans Administration Hospital in Newington, Griffin Hospital, Derby, New Britain (Conn.) Hospital, and the Norwich (Conn.) State Hospital; died Feb. 2, aged 65, of thrombosis of cerebellar artery.

Suldane, John Anthony ⊕ Chicago; St. Louis University School of Medicine, 1910; associated with St. Elizabeth Hospital, where he died Feb. 6, aged 72, of coronary artery heart disease.

Sullivan, Henry Bradley, Shawnee, Kan.; University of Kansas School of Medicine, Kansas City, Kan., 1920; member of the American Academy of General Practice; president-elect of the Kansas Academy of General Practice; member and past-president of the staff, Bethany Hospital, where he died Jan. 17, aged 61.

Sullivan, John Morgan, Sanger, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1910; health officer; associated with the Flow Memorial Hospital in Denton, where he died Feb. 1, aged 72, of cerebral hemorrhage.

Sutton, Harris Raymond ⊕ Hoffman, Minn.; University of Minnesota Medical School, Minneapolis, 1916; formerly served in the medical corps of the regular Navy; member of the school board; served as village mayor and council member; associated with Our Lady of Mercy Hospital and Douglas County Hospital in Alexandria, where he died Jan. 16, aged 69, of carcinoma of the lung with cerebral metastases.

Swanson, Gordon Rudolph ⊕ Naperville, Ill.; Northwestern University Medical School, Chicago, 1925; fellow of the American College of Surgeons; associated with Oak Park (Ill.) Hospital and Hinsdale (Ill.) Sanatorium and Hospital; died in the Passavant Memorial Hospital, Chicago, Feb. 18, aged 59, of lobar pneumonia and influenza.

Tell, Abram Batt ⊕ Worcester, Mass.; Kansas City (Mo.) University of Physicians and Surgeons, 1944; medical director of the Doctors Hospital, where he died Feb. 1, aged 55, of acute coronary thrombosis.

Thompson, Edward Cameron, Wellesley, Mass.; born in Walden, N. Y., Oct. 19, 1875; Columbia University College of Physicians and Surgeons, New York City, 1901; member of the Medical Society of the State of New York; an associate member of the American Medical Association; fellow of the American College of Surgeons; formerly practiced in Newburgh, N. Y., where he was past-president of the Orange County Medical Society; for many years member of the school board, and on the staff of St. Luke's Hospital; served on the staff of the Cornwall (N. Y.) Hospital; consulting surgeon at the Goshen (N. Y.) Hospital; veteran of World War I; died Jan. 3, aged 82.

Traxler, Paul Scoville, Granada Hills, Calif.; University of Illinois College of Medicine, Chicago, 1914; service member of the American Medical Association; veteran of World War I and II; formerly manager of the Veterans Administration Hospital in Phoenix, Ariz.; died in the Veterans Administration Center, West Los Angeles, Jan. 18, aged 65.

Urban, Kay Bonner ⊕ Tyler, Texas; University of Pennsylvania School of Medicine, Philadelphia, 1919; member of the American Academy of General Practice; at one time medical director of the Gonzales Warm Springs Foundation Hospital in Gonzales; on the staff of the East Texas Tuberculosis Sanatorium; died Jan. 24, aged 63, of aortic stenosis.

Walker, James Clyde, Obion, Tenn.; University of Tennessee College of Medicine, Memphis, 1924; member of the Tennessee State Medical Association; died in the Obion County General Hospital, Union City, Nov. 16, aged 64, of coronary occlusion.

Walton, Robert Ralph ⊕ Paradise, Calif.; George Washington University School of Medicine, St. Louis, 1916; member of the American Academy of General Practice; on the staff of St. Francis Hospital in Lynwood; died in Lincoln Jan. 4, aged 67, of rupture of the mesenteric artery and arteriosclerosis.

Watt, Charles Hansell ⊕ Thomasville, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1912; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons and past-president of the Georgia Chapter; member of the Southern Surgical Association; past-president of the Atlantic Coast Line Surgeons; veteran of World War I; senior surgeon at John D. Archbold Memorial Hospital; died Jan. 27, aged 71, of cerebral hemorrhage.

Watters, Marcus Henry, Helena, Mont.; George Washington University School of Medicine, Washington, D. C., 1905; at one time associated with the public health department in Washington, D. C.; formerly on the staffs of the Veterans Administration hospitals in Fort Harrison, Mont., Whipple, Ariz., and Wichita, Kan.; died in St. John's Hospital Jan. 29, aged 80, of pneumonia.

Webb, Jeff Newton ⊕ Seneca, S. C.; Emory University School of Medicine, Atlanta, 1915; member of the Southeastern Surgical Congress; veteran of World War I; died in the Oconee Memorial Hospital Jan. 12, aged 66.

Webb, Walter Reeves ⊕ Hampshire, Tenn.; University of Nashville (Tenn.) Medical Department, 1900; associated with the Maury County Hospital in Columbia; died Dec. 10, aged 86, of cerebral hemorrhage.

Wells, Clarence Edgar, Oakhurst, Calif.; University of California School of Medicine, San Francisco, 1915; died in Visalia Jan. 28, aged 73, of cerebral thrombosis and polycythemia.

Werner, August C. L. ⊕ Cincinnati; University of Louisville (Ky.) Medical Department, 1908; formerly superintendent of the Dayton (Ohio) State Hospital; died in the Good Samaritan Hospital Jan. 13, aged 77, of perforated duodenal ulcer.

White, Willard Justin ⊕ Longmont, Colo.; Barnes Medical College, St. Louis, 1896; veteran of World War I; served on the school board for 20 years and was its president for 10 years; team physician for Longmont High School athletic squads; associated with St. Vrain Hospital, where he died Jan. 20, aged 85, of chronic myocarditis and arteriosclerosis.

Wood, W. Franklin, Belmont, Mass.; born in Patchogue, N. Y., Nov. 19, 1890; New York Homeopathic Medical College and Hospital, New York City, 1912; Tufts College Medical School, Boston, 1917; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the Massachusetts Medical Society; served as president and secretary of the Massachusetts Hospital Association and of the New England Hospital Assembly, regent of the American College of Hospital Administrators, and president of the New England Superintendents Club; formerly secretary and vice-president of the Massachusetts Psychiatric Society; formerly affiliated with the Massachusetts General Hospital, Massachusetts Department of Mental Health, Boston Psychopathic Hospital, the Massachusetts Memorial Hospitals in Boston, the Monson State Hospital in Palmer, and the Danvers (Mass.) State Hospital; retired as director of the McLean Hospital in Waverley in 1956; psychiatric consultant at the Massachusetts Department of Mental Health and at the Leslie Junior College in Cambridge; school physician at the Belmont schools and health officer; veteran of World War I; served as a director of the Waverley Cooperative Bank and a trustee of the Belmont Savings Bank; died Jan. 15, aged 67, of heart disease.

Wood, Murray ⊕ Andrews, Texas; University of Texas School of Medicine, Galveston, 1939; died Jan. 23, aged 45.

Yakulis, Casimir Walter Jr. ⊕ Vandergrift, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1939; veteran of World War II; on the staff of the Allegheny Valley Hospital in Tarentum; died Feb. 1, aged 45, of coronary occlusion.

Yoder, Jacob Alexander ⊕ Mansfield, Ohio; University of Wooster Medical Department, Cleveland, 1898; associated with the Mansfield General Hospital; died Jan. 30, aged 88.

FOREIGN LETTERS

AUSTRIA

Tuberculous Meningitis and Miliary Tuberculosis.—At the meeting of pediatricians at the Van Swieten Convention in Vienna in September, Dr. H. E. Lorenz said that despite a marked decrease of the incidence of tuberculosis in childhood, particularly of the generalized hematogenous forms, early diagnosis still plays an all-important part in the prognosis of those with tuberculous meningitis and miliary tuberculosis. Its value was fully illustrated by the fact that most patients of all ages were cured if treatment was started early. The speaker emphasized the triad of headache, vomiting, and constipation in the early diagnosis of tuberculous meningitis in infants and children of school age. On the other hand the course of the fever is variable; in 50% of the patients the temperature was between 37 and 38.5 C (98.6 and 100.5 F). Such "classic" early symptoms as fatigue, lassitude, and irritability were observed in only 18% of the infants hospitalized at the Children's Hospital of the University of Graz and in only 6% of the older children. As regards other early symptoms, only spasms may be considered pathognomonic. The tuberculin test proved to be most reliable, being positive in 97% of the cases.

Studies on Children After Tuberculous Meningitis.—At the same meeting Dr. H. E. G. Huber reported a series of 33 children who had had tuberculous meningitis. In most of the patients the disease had occurred five years earlier. Changes in the eye grounds, cochleovestibular damages, and unilateral paresis were essentially as described by other observers, but, contrary to previous findings, intracranial calcification was not only present in patients with severe impairment but also in two cured children without other detectable defects. Likewise, the results of electroencephalographic studies showed no correlation with the earlier severity of the disease. Children with somatic defects without exception also showed mental deterioration; 24 of those who were apparently completely cured manifested more or less severe disturbances of the autonomic nervous system, affectivity, and single intelligence factors and had neuropathic and neurotic symptoms. Disturbances in affect consisted in severe emotional lability, complete absence of inhibition, or impoverishment of personality. Diminished capacity of concentration and association was found in several children despite a normal general intelligence. In a few patients the inherited features evolved in an exaggerated and distorted form. It was concluded that occupational therapy should be given after tuberculous meningitis.

Tetany.—At the same meeting Dr. H. E. Zweymuller classified tetany as hypocalcemic or normocalcemic. The first group included rachitogenic, parathyroid, and calciprivic tetany; tetany due to primary calcipenia or to chemical absorption of blood calcium; and tetany associated with kidney diseases. The second group included idiopathic tetany, occasional tetanic spasms, hyperventilation tetany, tetany associated with intoxication and infection, tetany associated with organic changes of the brain, chlorprivic tetany, and pseudotetany. Dr. H. G. Fanconi said that the cause of tetany in patients with normal blood calcium level was first believed to be based on a decrease of ionization of blood calcium possibly influenced by alkalosis. Later it was gradually recognized that it may be due to hyperphosphatemia, hyperkalemia, or hypermagnesemia. It has been demonstrated on one hand that hyperpotassemia promoted the manifestation of hypocalcemic tetany and on the other hand that manifestation of hypocalcemic tetany may be prevented in the newborn child by inducing hypopotassemia. Several forms of tetany have been detected in which it was not possible to demonstrate any change in blood chemistry. The cause might be found in the intracellular rather than in the extracellular fluid.

Tetany is a syndrome with many causes. Rickets on the one hand may lead to tetany and on the other hand also to parathyroid hypertrophy. The response to therapy is different in patients with parathyroid tetany and those with rachitogenic tetany. Patients with parathyroid tetany responded readily to dihydrotachysterol, but patients with rachitogenic tetany did not. The healing of the rachitic process started and the blood calcium level was restored to normal only when dihydrotachysterol was given and vitamin D discontinued. The opposite did not hold. Patients with chronic hypoparathyroidism might have good results from the much less costly treatment with vitamin D than with dihydrotachysterol. There seems to be a regulatory center in the brain for calcium and phosphorus metabolism. An American physician has suggested that hypercalcemia which occasionally may be observed in patients with poliomyelitis

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The items in these letters are contributed by regular correspondents in the various foreign countries.

is the consequence not only of inactivity but also of a paralysis of the centers in the diencephalon. The speaker observed a newborn infant with severe brain damage who in the first month of life had a marked hypocalcemia associated with tetany. This supports the theory that there is a center for the regulation of calcium and phosphorus that may be subject to injury.

Infantile Epilepsy.—At the same meeting Dr. H. H. Asperger said that with the general increase of cerebral disturbances in childhood, the incidence rate of epilepsy has markedly increased. Differential diagnosis of the various types of infantile epilepsy may be difficult. Spastic conditions may arise from various causes and later prove to be harmless. The electroencephalogram has become one of the most important diagnostic devices but the results should always be evaluated in connection with the clinical findings.

Rickets.—At the same meeting Dr. H. O. Jurgensen said that although by improved diagnostic procedures more distinct delimitation has been made between true rickets due to vitamin deficiency and the complex group of treatment-resistant rickets, and although in the latter group some types have been differentiated, the relationship between the intermediary calcium and phosphorus metabolism has not been completely elucidated. The frequency of rickets in the rural and city areas, even if the cases are mostly mild, indicates that the organization for the prevention of rickets is defective and will remain so as long as the administration of vitamin D to nurslings depends on the voluntary visit of a member of the welfare service or of a physician. To provide for an extensive program of prevention starting as early as possible, it was proposed that all pregnant women be supplied with vitamin D in the last months of pregnancy. This would benefit both mother and child. Additional postnatal preventive measures would, however, still be required. One such measure is the fortification of milk with vitamin D_3 and A. Such milk is also beneficial for the elderly who because of an absorptive insufficiency have an increased need of vitamins. Steps must be taken, however, to prevent hypervitaminosis in persons taking vitamin supplements.

Vomiting in Nurslings.—At the same meeting Dr. H. J. Siegel said that he gave chlorpromazine to 16 infants with hypertrophic pyloric stenosis. Of these 11 were cured, and 5 had to be operated on. Treatment was started with chlorpromazine alone in 13 nurslings and this brought about cures in 8 patients. Of the five patients in whom no response was obtained, one was immediately operated on; in the other four, combined treatment with chlorpromazine and atropine methylnitrate was used. This was successful in only one infant, and the other three had to be operated on. Two of the infants who did not respond to treatment with atropine methylnitrate alone were cured by the combined therapy. One infant who was given the combined treatment from the beginning had to be operated on. Treatment with chlorpromazine was highly effective in patients with habitual vomiting, but the administration of this drug should be reserved for patients with unusual restlessness and increased tonus in whom the ataractic effect of this drug is desirable. In all the rest of the patients a processed carob flour preparation (Arobon) is indicated as it combines the advantages of prompt effectiveness with a safe and simple administration.

Cerebral Angiography in Children.—At the same meeting Drs. H. K. Kundratitz and E. Zweymüller reported on the visualization of the course and distribution of the cerebral vessels with the aid of angiography. Abnormal air spaces over the hemisphere indicate atrophy following trauma. In such patients one finds that, contrary to normal, the cerebral arteries do not extend to the internal lamina. The absence of blood supply in circumscribed areas proves the presence of a defect. Cerebral cysts, porencephalitis, and hydrocephalus give diagnostic findings. The absence of the angulation of the anterior cerebral artery, extension of the vessels, or a change in the so-called syphon may be also considered as pathological. Supplementing information obtained by pneumoencephalography and electroencephalography, cerebral angiography plays an important part in diagnosis.

Dr. H. E. Klausberger reported the results obtained by cerebral and cerebellar angiographic studies in 78 children under 14 years of age who had suffered brain damage. A practicable anesthesia is a prerequisite for the success of this procedure. At the second Surgical University Clinic in Vienna, Austria, thoracic and abdominal angiography was performed under a modified method of anesthesia. No complications were observed during such examinations. The contrast medium used was sodium acetrizoate; 5 cc. of a 35% solution of this agent was injected into infants and small children up to the age of five years. In older children a 50% solution was used. The removal of the injection cannula should be followed by applying firm and prolonged pressure over the vessel and the patient should be observed until he awakens.

Special Facilities for Premature Infants.—At the same meeting Dr. H. H. Gross said that all premature infants weighing less than 1,800 Gm. (4 lb.) should be placed in a special ward that would meet the requirements for a sterile environment and provide specially trained nurses. There should be separate wards for those born in hospitals and for those born at home. Sick premature infants should be placed in an isolation ward. The immediate transportation of premature infants in portable incubators to the premature ward is essential. During the use of incubators the least possible additional supply of oxygen should be given in order to prevent the occurrence of retrolental fibroplasia.

Anemia in the Premature Infant.—At the same meeting Dr. H. G. Weippl said that in the treatment of anemia in the premature infant it is necessary to distinguish between the first phase of normochromic and the second phase of hypochromic anemia. The first phase lasts up to the 10th month of life and may be due to a retrogressive extramedullary erythropoiesis, or an increased destruction of the fetal hemoglobin-bearing macrocytes. A causal therapy is, therefore, not possible, but blood transfusions and cobalt may be indicated. Forty premature infants were treated with an organic compound of iron, cobalt, and copper, and 36 were cured. There was no iron deficiency, therefore treatment with iron alone could not have been effective. The second phase of anemia is due to a too small iron deposit in the premature infant, which distinguishes it from nutritional anemia. Prevention of this anemia is still unsatisfactory. An average hemoglobin value of 44% was observed in 40 premature infants between the ages of 6 and 18 months. In contrast to the first phase, the second phase is progressive and may lead to a severe or fatal anemia. The oral administration of iron, however, brings about a prompt cure, and the occurrence of anemia may be prevented if treatment is started early enough (in the third month at the latest).

Recurrent Parotitis.—At the same meeting Dr. H. P. Krepler reported on 13 patients with recurrent pyogenic swelling of the parotid gland. In order to differentiate this disease from mumps and from chronic glandular or interstitial processes, it is essential to examine the secretion and to obtain a sialogram. During the acute phase of the disease the secretion is mucopurulent, but in the remissions it is white, flocculent, and slightly turbid. This flocculent cloudiness is best seen when the secretion is drained through a cannula into a test tube. Even if the swelling is unilateral the roentgenograms usually show a bilateral, grape-like cystic enlargement of the end-ramification of the duct system. These changes were distinctly and fully demonstrated on both sides, during the first unilateral attacks, in an infant at the age of 16 months. In contrast to a previous concept these observations favor the belief that the roentgenologic changes in the duct system are not primarily the sequel of chronic inflammation but represent an anatomic factor (congenital sialodochiectasis) which facilitates the invasion of the parotid duct system by bacteria of the oral cavity. Such other factors as the bacterial content of the oral cavity, the patient's resistance, and the secretion and discharge of saliva must also be considered. The condition of the opening of the Stenson's duct, which was larger than usual in all these patients, may be a contributing factor. This concept does not rule out the occurrence of secondary destructive changes or of the distention of the duct system arising from a local inflammatory process. Antiseptic mouthwashes, the instillation of antibiotics, and the general treatment with phenoxymethyl penicillin were recommended.

Infectious Diseases.—At the same meeting Dr. H. H Zischinsky reported on the changes in the incidence of acute infectious diseases in the last decades. This is especially true for diphtheria which has almost entirely disappeared. In 1956 only 56 diphtheria cases were reported in Vienna. Scarlet fever is now so devoid of complications that it hardly deserves to be called a disease. No death resulted from scarlet fever in 1956 in Vienna, and scarlatinal nephritis is a rarity. The enteric infections occur with about the same frequency but are much milder. Measles and whooping cough have lost much of their previous dangerous character. In contrast the prevalence of virus infections, particularly those due to the neurotropic viruses, has increased.

INDIA

Intrapleural Pressure in Lung Abscess.—P. N. Laha (*Journal of the Association of Physicians of India*, vol. 6, January, 1958) recorded the intrapleural pressure on the affected side in 25 patients with lung abscess. The normal intrapleural pressure was –14 to –3 cm. H_2O on inspiration and –10 to 0 cm. H_2O on expiration. In 15 of the patients the pressure was within normal limits on inspiration and in 10 it was normal on expiration. The roentgenograms of the chest in all these patients were negative except for the evidence of lung abscess. The abscess per se did not affect the elasticity of the lung which is important in the normal functioning of the organ. In seven patients the pressure was less than –3 cm. H_2O on inspiration and in seven it was positive on expiration. In all these except one, as evidenced radiologically, the abscess was surrounded by pneumonitis of varying dimensions, and some in addition had the clinical signs of pulmonary emphysema. In these cases, therefore, the pneumonitis by itself or in combination with emphysema was responsible for reducing the intrapleural pressure on inspiration and changing it to positive on expiration. In one patient in whom no such changes were apparent but in whom the pressure was positive on expiration, possibly the changes of emphysema were not advanced far enough to be detected clinically.

Pneumonitis damages the elasticity of the lung and interferes with the intrapleural pressure. Emphysematous lungs are overdistended and the residual volume is increased, thus altering the elasticity of the lung. In four patients the pressure was within the normal range in one phase of respiration and altered in the other. Here there may have been only a partial impairment of elasticity. In three patients the pneumothorax needle introduced through the fifth intercostal space failed to record the intrapleural pressure in either phase of respiration, but when introduced through the second intercostal space the pressure was recorded. In two patients it could not be recorded in any phase of respiration when the pleural space was approached through the fifth, fourth, third, and second intercostal space. This may be explained by the occurrence of pleural reaction resulting in adherent pleura, the reaction being intensive but localized in the first three patients in whom the obliteration of the pleural space was limited, but intensive and extensive in the latter two patients in whom the pleural cavity was obliterated over a wider area. The mean intrapleural pressure showed variations from the normal which reflected the variations of the inspiratory and expiratory intrapleural pressure. The side and site of the abscess did not produce any significant alteration in the intrapleural pressure. The duration of the abscess per se did not affect the intrapleural pressure.

Bronchonasal Allergy in Children.—S. S. Manchanda and co-workers (*Indian Journal of Child Health*, vol. 7, January, 1958) reviewed 175 cases (118 in boys and 157 in girls) of bronchonasal allergy in children below the age of 14 years. Of these children 135 came from urban and 40 from rural areas. Inquiry into the housing conditions showed the atmosphere to be dusty and perhaps richly impregnated with pollens. The greatest incidence as regards the onset of symptoms was during the first five years, 23% occurring in the first year of life. The youngest age at which one of the patients presented some evidence of allergy was one week. A lactovegetarian diet was used by 115. A definite history of food allergy was obtained in only 50 cases, the common offending articles of the diet being sour preparations of milk such as curds, oily and fried foods, iced drinks, ice cream, onions, rice, chili, pulses, eggs, oranges, potatoes, and beans. One infant was highly sensitive to cow's and all dried milks and their products but not so to his mother's milk. In fact, no child was allergic to his mother's milk. History of dust allergy was present in 20 cases or 11.4%. Half the patients became worse during changes of seasons. Some developed acute attacks of bronchonasal allergy after a cold bath, cold drink, or cold breeze. In 39 patients (22.2%) pneumonia, in 18 (10.3%) pertussis, in 6 (9.1%) measles, in 2 (1.2%) smallpox, and in 1 (0.6%) diphtheria initiated or altered the course of the disease. Tonsillectomy and adenoidectomy either precipitated or aggravated the condition in nine patients.

Besides respiratory allergy, other allergic states met with in this series were urticaria in seven patients and eczema in two. A positive family history of allergy was obtained in 52 cases (29.7%). Pure nasal allergy was present in 5, bronchial allergy in 79, and combined bronchonasal allergy in 91 patients; 43 started with nasal allergy and 132 with bronchial allergy. Abnormal physical signs were found in only 98 patients and these were diffuse rhonchi in 87, prolonged expiration in 62, and crepitations in 52. Chronic bronchitis developed in 53 patients, emphysema in 46, bronchiectasis in 5, enlarged tracheobronchial lymph nodes in 4, and cor pulmonale in 1. The total leukocyte count was over 10,000 in 45. The eosinophilic count was over 4% in 116. An absolute eosinophilic count over 400 per cubic millimeter was present in 40 patients, and in 4 it was over 4,000 per cubic millimeter. Stool examination showed helminthic infestation of different types in 54 patients. Radiologic examination of the chest gave abnormal findings such as pleural thickening, enlarged glands, and pneumonitis in 22. Screening showed evidence of emphysema in 46. Skin sensitivity tests done on 19 selected patients showed a positive reaction to one or another allergen in only 11 patients.

Acute Diarrhea.—Patel and Agarwal (*Indian Journal of Child Health*, vol. 7, January, 1958) treated 52 children suffering from acute diarrhea with a combination of neomycin and sulfamethazine. None of them had received any therapy before admission; 37 were considered to be severely ill as judged by the degree of dehydration, toxemia, and general debility. The age of the patients in this series ranged between three months and seven years. All had fever. They were divided into those with (1) diarrhea alone, (2) diarrhea and vomiting, (3) involvement of the respiratory tract in addition to diarrhea, and (4) mild to severe malnutrition in addition to diarrhea. The combined treatment was given in the form of a solution during the day in four divided doses, the total daily dose being 50 mg. of neomycin and 0.6 Gm. of sulfamethazine per kilogram of body weight. Stools were examined repeatedly in the course of treatment.

The response was judged on the basis of improvement in general condition, reduction in the number and character of stools, changes in stools detected microscopically, and the rate of improvement in terms of days required. Those with diarrhea alone showed a satisfactory response within three or four days, abnormal gross and microscopic changes being absent from the stools from the fourth day. Those with vomiting took about a day longer as the drug combination by itself did not control vomiting, and auxiliary treatment had to be given. In children with involvement of the respiratory tract, sulfamethazine was not enough to control the respiratory infection and penicillin was given. The state of malnutrition in the fourth group did not materially alter the response to therapy as far as diarrhea was concerned. Those who failed to improve with this drug combination in the vomiting and the malnourished groups, were unaffected either by increasing the dose or prolonging the therapy. The response on the whole was encouraging. No untoward effects were encountered, and there was no increase in fungus infections of the intestinal tract as a result of this therapy.

Liver Damage in Heart Failure.—P. N. Wahi and co-workers (*Indian Journal of Medical Research*, vol. 46, January, 1958) stated that prolonged congestion in the liver has been known to lead to cirrhosis and derangement of liver function. They studied clinical gradations, functional changes, and needle biopsy specimens of the liver in different stages of congestive failure. Of 61 patients studied, needle biopsy was performed on 25. The patients included those with rheumatic endocarditis, cor pulmonale, hypertensive and coronary heart disease, syphilitic heart disease, subacute bacterial endocarditis, and congenital heart disease. They were graded according to the severity of congestive failure, taking into consideration the general appearance of the patient, degree of dyspnea, venous engorgement in the neck, severity of edema, and extent of hepatomegaly. Liver function tests including the total proteins, albumin, globulin, and cephalin-cholesterol flocculation test, prothrombin time determination, bromsulfalein retention, urine urobilinogen, and serum bilirubin were performed on every patient. A 24-hour sample of urine was subjected to an elctrophoretic analysis.

The extent of centrilobular hepatic necrosis was graded into three grades depending on the extent of the area involved. Central necrosis was almost invariably found in patients with any form of heart failure. The most severe form of central necrosis was seen in patients with congestive heart failure due to mitral stenosis. The authors observed histopathological changes showing the transition from the earlier centrizonal congestion to advanced cardiac fibrosis. The severity of the failure was fairly closely related to the severity of central necrosis. The latter was also closely related to the duration of the disease. Mitral stenosis was also the most common cause of cardiac fibrosis. Abnormality of liver function tests was not related closely to the severity of the disease. The albumin and globulin content, cephalin-cholesterol flocculation, and bromsulfalein excretion tended to be more abnormal in patients with advanced central necrosis. Those with severe hepatic damage gave high serum bilirubin values. Marked aminoaciduria was seen in patients with advanced congestive failure. The correlation of the clinical severity, the extent of central necrosis, and the hepatic function tests indicated that clinical judgment may be a more accurate measure of the extent of damage to the liver than the function tests alone.

Psychiatric Society.—Inaugurating the 11th annual conference of the Indian Psychiatric Society in Poona in February, Bombay's Health Minister said that a large number of mentally ill persons are in need of hospitalization in India. Such hospital accommodations fall far short of the demand and more psychiatrists appreciative of both curative and preventive treatment are also needed. In the preventive field, of about a dozen child guidance clinics in the country six are located in Bombay city and its suburbs. Bombay University is one of the two in the country offering postgraduate training in psychiatry.

Steroid Hormones and Salivary Amylase Activity.—S. N. Narayan (*Indian Journal of Medical Research*, vol. 46, January, 1958) stated that some workers investigating the steroid enzyme relationships believe that hormones exert their action by direct or indirect effect on accelerators and/or inhibitors of enzyme systems. The author determined the amylase activity of saliva from young adults before and after adding testosterone and other steroid hormones. The normal range of amylase activity in the saliva of the human subjects tested varied between 460 and 965 units, a unit of amylase activity being the amount of enzyme that under the conditions of the procedure followed in this study, in the presence of 60 mg. of starch, will hydrolyze 10 mg. of starch in 30 minutes to a stage at which no color is given with iodine. Desoxycorticosterone acetate and progesterone had a significant inhibitory effect on the amylase activity, the influence of the latter being more marked than that of the former. Testosterone propionate had only a slight inhibitory effect.

NORWAY

Public Health Legislation.—In 1957 an imposing list of legislative reforms were enacted (*Tidsskrift for den norske laegeforening*, Jan. 15, 1958). The physician who has abused his right to prescribe narcotic drugs will be dealt with by a body composed of two lawyers and two physicians. If he is convicted, he may be deprived of his right to prescribe such drugs for a period of up to five years. Judgment in such a case must be unanimous. A potential offender may, however, voluntarily apply to the authorities to be relieved of his right to prescribe such drugs for a given period. In another legislative reform, control of the activities of alcoholics is extended to drug addicts. Both groups will be liable to forcible detention in an appropriate institution for up to two years. Another reform deals with the appointment of public health nurses who, working under district health officers, will have much greater scope for their activities than formerly. They will not only have educational responsibilities, but will have had to pass through a school of public health nursing. With regard to sickness benefits for insured persons, steps have been taken to prevent the mistake of letting the value of sickness benefits exceed one's earnings in good health.

Antimalarial Drugs for Asthma.—Dr. A. Engeset (*Nordisk medicin*, Dec. 5, 1957) reported on 32 patients for whose obstinate asthma condition he had given two 100-mg. tablets of quinacrine daily for three weeks and then 100 mg. daily, or two 250-mg. tablets of chloroquine daily for one week, and then 250 mg. daily. The quinacrine was apt to provoke dermatitis or psychosis, whereas the chloroquine gave rise to no serious complications. The observation period after the institution of this treatment was three months to four years. Various degrees of improvement could be claimed in 75%, and marked improvement in 53%. Improvement was noted after about three weeks, and it was usual for a relapse to occur after this treatment had been discontinued for a few months. On resuming this treatment the patients again improved. Dr. J. Boe suggested that the benefits claimed by Engeset on behalf of the antimalarial drugs reflected the personal care he devoted to his patients rather than any specific properties possessed by the drugs given. At all events no permanent cure of asthma could, in Böe's opinion, be claimed for these antimalarial drugs.

Radium Hospital.—The greatly enlarged Radium Hospital on the outskirts of Oslo was opened in 1932 with 75 patients. Another 22 beds were made available in 1941. The hospital now has beds for 310 patients (180 for general use, 90 for gynecological patients, and 40 for ambulatory patients).

Vital Statistics.—Of the 29,981 deaths that occurred in Norway in 1956 only 3% could not be accounted for, and accidents, suicides, and murders accounted among them for another 6%. Diseases of the cardiovascular system accounted for 31%, and if disease of the vessels of the central nervous system are added, then the two groups together accounted for 48% of all the deaths between the ages of 60 and 69 and for 58% between the ages of 70 and 79. Malignant disease was responsible for 19% and tuberculosis for 1.2% (which compares favorably with the 2% in the period 1951 to 1955). Syphilis was held responsible for the death of 49 men and 14 women, whooping cough for 14 deaths, measles for 12, and acute poliomyelitis for only 2. There were 1,463 deaths from pneumonia and 152 from bronchitis. It is a disquieting fact that the death rate from the cardiovascular diseases is not only high but is rising in the case of men over 50 and of women over 70.

PERU

Adrenal Hypofunction due to Paracoccidioidomycosis.—Patients with advanced lesions of paracoccidioidomycosis in the adrenals found only at autopsy have been reported, but patients with this disease showing evidences of adrenal hypofunction have been reported thus far only by Azevedo, in 1934. Dr. J. Escudero and co-workers (*Archivos peruanos de patología y clínica*, vol. 11, January, 1957) have treated another such patient, a 55-year-old man who, after a dental extraction five years prior to admission, developed an ulcer in the labial mucosa of the lower lip. This increased in size very slowly, with periods of apparent remission. Chlortetracycline and oxytetracycline were given parenterally and orally without benefit. A biopsy specimen made at the National Institute of Neoplastic Diseases was reported to reveal Mycobacterium tuberculosis. The patient received specific therapy, made some improvement, and returned to his home. A short time later the lesion was reactivated and a cough productive of purulent sputum developed. Treatment for tuberculosis was resumed but this time there was no improvement. The patient was hospitalized in the Dos de Mayo Hospital of Lima where examination of the secretion from the labial lesion revealed Blastomyces brasiliensis but no tubercle bacilli.

Physical examination revealed a poorly nourished, slightly febrile, tachycardic patient, for whom both eating and talking were very painful. In the face, at lower lip level, an ulcer extending from the midline to the left commissure of the mouth was found. Although a roentgenogram of the chest revealed multiple pulmonary lesions, there were no physical signs in the chest. On the other hand, the patient was found to have a consistently low blood pressure averaging 80/60 mm. Hg. The erythrocyte count was 3,500,000. The sedimentation rate was increased. Cultures of sputum and feces in Sabouraud medium were positive for B. brasiliensis. Shortly after admission the patient began to complain of weakness. Based on the good responses obtained with sulfisoxazole in other patients with this disease, the authors gave this drug to the patient but, although the labial ulcer began to heal, the course was steadily downhill, and after 44 days of hospitalization he died. At autopsy caseation of the adrenal glands, disseminated fungal lesions in both lungs and the liver, and a regressive fungal ulcer of the lower lip were found. The parenchyma of the adrenal glands was totally destroyed.

The Society of Public Welfare.—The report of the Society of Public Welfare of Lima for 1956 indicated that the number of patients treated in the six hospitals supported by this institution has steadily increased year after year. In 1956 there were 74,174 compared with 48,084 in 1945. The death rate has decreased from 6.5% in 1945 to 2.8% in 1956. A decrease was also observed in the average stay in the hospital from 40.8 days in 1945 to 24.8 days in 1956.

SWEDEN

Cancer Register.—Under the auspices of the Swedish National Health Service, a central register of cases of cancer was started in January. A similar service is already at work in the other Scandinavian countries. Three report forms have been provided. Form A is for hospital physicians, form B for pathologists' biopsy reports, and form C for postmortem findings. Although duplication is possible, experience with other cancer registers has shown that this risk can be discounted in practice. There will be no duplication when a patient moves from one hospital to another nor when relapses or metastases occur, but a new, primary growth will have a new place in the register. Provision is also made for registration of cases in which the original diagnosis is found to be mistaken. The main object of the register is to provide reliable morbidity figures, and it does not directly set out to discover survival rates after different methods of treatment for this is rather the task of the institutions concerned with the treatment of cancer. In cooperation with the Central Statistical Bureau, the register has undertaken to review all the death certificates in which cancer is mentioned.

Cerebral Palsy Survey.—Since 1952 a committee has studied the cerebral palsy problem in the city and county of Stockholm. D'Avignon and Gardeström (*Nordisk medicin*, Jan. 9, 1958) estimated that about 1.4 of every 1,000 children suffer from some form of cerebral palsy. Stockholm, with a population of over a million, has about 16,000 such patients. Of the 366 patients forming the basis of a special study, 214 were male and 152 were female. About 80% had spastic paraplegia with involvement of the pyramidal tract. The remaining 20% were made up of other forms such as athetosis, tremor-rigidity, and ataxia. It should, however, be noted that the ailment often defies classification in well-defined categories as mixed forms are common. An IQ of 75 or more was found in more than 55% and children presenting tetraplegias, ataxias, mixed forms, and tremor-rigidity were on the whole worse off in respect to their IQ than the other children. There was a history of epileptic attacks in 112 of the 366 children. The epilepsy rate was higher among the tetraplegics than among diplegics, and it was comparatively low among the athetotics. It was comparatively high among those with a mixture of athetosis and spasticity. An attempt to correlate the severity of the trauma with the IQ in evaluating the future prospects of earning a living was made with 184 patients whose IQ was 75 or more. The prognosis in this respect was moderately good in about 33%, but it was excellent in only 17%, and here the trauma was comparatively slight. The outlook for employment in the open market is poor, and the victim of cerebral palsy needs all the special training and guidance he can get before leaving school. The protected workshops needed for the victims of cerebral palsy do not yet exist in Sweden.

Tetanus.—Dr. L. Thorén (*Nordisk medicin*, Jan. 9, 1958) stated that although tetanus neonatorum has not occurred in Sweden in recent years, other forms have cropped up occasionally, with 30 to 60 cases annually between 1943 and 1954. The 47 such patients treated in Stockholm between 1946 and 1955 included 13 children who contributed 6 of the 12 deaths in this series. While there were 37 cases in the first five years of this decade, there were only 10 in the following five years, probably as a result of the use of triple (diphtheria, whooping-cough, and tetanus) immunization. The experience of a surgical hospital in Uppsala indicated that in dealing with children much depends on the skill with which they are nursed, the closest supervision being needed to detect an isolated recurrence of convulsions that may be overlooked during an illness running into weeks. Active immunization with triple vaccine should be supplemented when children begin school by a booster dose as a matter of prophylactic routine. The fear of anaphylactic shock and serum sickness in connection with passive immunization warrants a certain reserve in adopting it as a prophylactic measure, but as a therapeutic measure it should be pushed. Thorén recommended a dosage of 100,000 international units daily for four days or longer when the primary focus of the disease has eluded detection.

BCG Vaccination by Mouth.—Ström and Sternberg (*Nordisk medicin*, Jan. 9, 1958) drew attention to a lack of research on the claims made on behalf of BCG vaccination by mouth as advocated in South American countries. The authors treated guinea pigs with radioactively marked BCG vaccine to determine whether 20 mg. of the vaccine given by mouth to some animals and 2 mg. injected intracutaneously into others would give a 10:1 ratio of radioactivity of the serum, urine, and certain organs. They found that the rate at which radioactivity occurred in the blood was smaller after oral than after intracutaneous vaccination even when the dosage of the former was 10 times greater than that of the latter, but various other observations were less negative. It was concluded that further observations should be made.

UNITED KINGDOM

Otitis Media.—A report by the Medical Research Council reveals that many patients with otitis media are being treated by general practitioners in the patient's home (Report of a Survey by the Medical Research Council's Working Party for Research in General Practice). A survey was made by 28 physicians in various parts of the country, covering 47,000 patients, of whom 11,277 were under 15. The yearly incidence of acute otitis media in this group was 1,323, but only 14 patients, or just over 1%, were hospitalized. Children aged 2 to 14 years formed 85% of the total. The highest attack rate was for children between the ages of 3 and 6, the incidence rising to nearly 21% at the latter age. After this age there was a decline to 3% at 14 years, to 1% in young adults, and to 0.2% in those over 65. The incidence of otitis media was highest in winter and lowest in summer. More than half of the patients had had previous attacks, tonsillectomy and adenoidectomy had no effect in preventing recurrence. The mean duration of the illness was 11 days. Treatment was with sulfonamides or antibiotics, mainly penicillin, in 80% of the cases. Antibiotics were given orally in 41% and parenterally in 27%, while 27% were given sulfonamides. There were complications in only eight patients, or 0.6%. Six months after the onset 17 had persistent aural discharge, and nearly 4% of the children and 17% of older patients had some degree of deafness, which generally occurred after recurrent attacks.

Vaginal Cytology as an Index of Ovarian Activity.—Osmond-Clarke and Murray (*Brit. M. J.* 1:307, 1958) during an investigation on the possible relationship between estrogens and uterine carcinoma, also examined the value of cytology in assessing overian function. This method has the advantages of being simple, inexpensive, nontraumatic, and it does not involve the hospitalization of the patient or the use of laboratory animals. The smear is taken by inserting a glass tube with a rubber bulb attached into the posterior fornix of the vagina and aspirating secretion into the tube. The secretion is transferred to a slide and stained by Shorr's technique. The percentage of cornified squamous cells in the total cell count varies with the amount of estrogen utilized in the body. This is referred to as the cornification index. Conversely the percentage of basal cells varies with the degree of atrophy of the vaginal epithelium. The functional state of the ovaries is recorded by plotting the daily percentages of each type of cell.

Although the smear in atrophic amenorrhea consists chiefly of basal cells with an occasional squamous cell, all types of cells are present. In the hypotrophic type cells varying degrees of cornification are present, and in the hypertrophic type there is a persistently high degree of cornification. Information can be obtained in cases of infertility from a study of vaginal smears, particularly if the cycles are anovular. Some may show a cornification curve similar to that obtained in an ovulatory cycle, but without the characteristic postovular changes. Others may show evidence of a more marked abnormality. Periodic vaginal smears are of value in assessing progress in the management of the menopause by estrogens. The vaginal smear is also useful in detecting the presence or absence of estrogen in patients with uterine carcinoma.

Legal Action over Fluoridation.—Sodium fluoride has been introduced into the Andover water supply. A motion by the borough council to stop this measure was defeated by only one vote and now an "antifluoride" association has been formed in the district. This association has taken legal proceedings against the council. The writ claims that the fluoridation of a water supply is beyond the purview of the council, contrary to law, and an infringement of individual liberty. The writ further states that the council must supply natural water and not water to which fluoride has been added. It contains an injunction to restrain them from supplying fluoridated water. If this injunction is granted the council must cease supplying water containing fluoride or be collectively summoned for contempt of court.

Thalassemia Minor in an Englishwoman.—Thalassemia is a hereditary hypochromic microcytic anemia thought to be confined to the inhabitants of the Mediterranean area. A mild and symptomless form of the disease, known as thalassemia minor, occurs. Havard and co-workers (*Brit. M. J.* 1:304, 1958) observed a case in an Englishwoman. The patient, a woman of 48, was of pure English stock, her forbears having been farmers in East Anglia for many generations, without any intermarriage with foreigners. Although her mother was anemic she lived to an advanced age. The patient was referred to hospital for investigation of a hypochromic anemia refractory to iron treatment. She had two bouts of hematemesis from which she recovered, but her hemoglobin level could not be raised above 10 mg. per 100 ml. by oral or intravenous administration of iron. On examination the only physical sign was cardiac enlargement. Hematological examinations showed an iron-resistant hypochromic microcytic anemia with target cells, basophilic stippling, reticulocytosis, and increased osmotic resistance of the red blood cells; the presence of fetal hemoglobin and an increase in a fraction of normal adult hemoglobin, designated Hb-A_2; and a normal serum iron level. A tentative diagnosis of thalassemia minor was made. This was confirmed by similar changes in the blood of two of three siblings, both of whom were asymptomatic. This is the first well-authenticated case of thalassemia in a person of British stock.

Uterine Irritability.—Dr. C. N. Smyth (*Lancet* 1:237, 1958) stated that a knowledge of the degree of irritability of the pregnant uterus is of value to the obstetrician in determining whether a patient will abort spontaneously, whether labor is imminent, or whether amniotomy or an oxytocic will induce labor. When the uterus is very irritable, labor is usually imminent. When irritability is less, a longer time will probably elapse before labor begins spontaneously. This differentiation enables patients to be kept in hospital, or to be sent home. Smyth assesses the biological irritability of the uterus by measuring the minimal dose of oxytocin required to produce a perceptible change in myometrial activity, which is recorded by a tocograph with the patient at rest in bed. The magnitude of the dose of oxytocin required specifies the degree of irritability. The dose is from 0.01 to 0.1 unit given intravenously at one-minute intervals. The oxytocic sensitivity test has useful clinical applications. When labor is induced surgically, the results of the test bear a significant relation to the interval between amniotomy and the onset of labor. They are also related to the rate of oxytocin infusion required to establish regular labor-like contractions. In normal patients near term, the test indicates how long an interval may be expected before the spontaneous onset of labor. If the test shows a constantly low uterine irritability day after day, the infant is likely to be postmature unless labor is induced. The test also provides a method of measuring the change in irritability resulting from the administration of drugs or from the application of other stimuli to the myometrium or its nerve supply.

Serum Vitamin B_{12}.—Spray and Witts (*Brit. M. J.* 1:295, 1958) assayed the serum vitamin B_{12} level in normal subjects and in patients suffering from various conditions, using a microbiological method based on the growth of Lactobacillus leichmannii. The range of values found in 123 normal subjects was 150 to 1,000 micromicrograms per milliliter (average 450). Of 94 patients with pernicious anemia in relapse, 85 gave values of 100 micromicrograms per milliliter or less, 7 gave values between 100 and 170, and 2 anomalous normal results were obtained. In patients with subacute combined degeneration of the spinal cord the level of serum vitamin B_{12} was of the same order as in those with pernicious anemia. This has proved useful in differentiating this disease from other neurological conditions. A moderate reduction in serum vitamin B_{12} is present in patients with the pernicious anemia of pregnancy although it does not reach the low levels found in patients with Addisonian pernicious anemia. Many patients develop a megaloblastic anemia as a complication of partial or total gastrectomy, small intestinal diverticulosis, blind loops left after intestinal operations, the malabsorption syndrome, dietary deficiencies, and anticonvulsant therapy. This anemia is associated with a lowered serum vitamin B_{12} level. Patients with chronic myeloid leukemia had a high serum vitamin B_{12} level. In those with chronic lymphatic leukemia normal results were obtained, and in those with acute leukemias and polycythemia both normal and high levels were found.

Serologic Diagnosis of Carcinoma.—Burrows (*Brit. M. J.* 1:368, 1958) investigated the Makari test for carcinoma and reported that it was positive in 96.7% of 301 cases of histologically proved cancer. The basis of the test is that any carcinoma will release into the circulation a substance specific to carcinoma tissue, not found in normal subjects, which is probably a molecule or part of a molecule making up the substance of the tumor itself. This substance produces a reaction with antibodies in a guinea pig that has been sensitized with carcinoma tissue. To perform the test a female virgin guinea pig is sensitized by injection with the deposit remaining after centrifuging a 20% aqueous emulsion of carcinoma tissue. A month later the uterine horns are removed, suspended in a Schultz-Dale bath, and desensitized to the normal elements in plasma; 1.5 ml. of serum from the suspected patient is added to the bath containing the immune horn and a normal control horn. If a carcinoma is present the immune but not the control horn contracts.

Many differing types of tumor, such as adenocarcinoma of the breast; adenocarcinoma, squamous carcinoma, and oat-cell carcinoma of the lung, adenocarcinoma of the rectum, colon, stomach, and prostate; hypernephroma; chorioepithelioma; and glioblastoma, including metastases, were investigated. Ten false-negatives were obtained in early squamous carcinoma of the tongue, carcinoma of the thyroid, astrocytoma, postcricoid squamous carcinoma, malignant melanoma, malignant carcinoid, adenocarcinoma of the pancreas, primary squamous carcinoma of the larynx, adenocarcinoma of the breast, and secondary adenocarcinoma (primary unknown). Of the tests of 207 patients without carcinoma, who were used as controls, 200 were negative. This also represents an accuracy of 96.7%. The seven false-positives were in patients with simple gastric ulcer (1), chronic granulomatous lesion of the breast (1), infarct of the brain (1), and nephrosis (4). A positive test was not obtained in patients with sarcoma or leukemia. The test was of no quantitative value, giving no indication of the size of the carcinoma, but it was sensitive to tumors as small as half an inch in diameter.

Burrows and Neill *(Brit. M. J.* 1:370, 1958) investigated the nature of the substance responsible for the Schultz-Dale test. The serum of patients with carcinoma giving a positive test was subjected to continuous paper electrophoresis, which separated an active substance preceding the albumin, which substance was thought to be a protein or polypeptide of low molecular weight. Hydrolysis and paper chromatography gave large spots due to arginine. This is in keeping with the statements that cancerous tissue contains more arginine than noncancerous tissue. It was concluded that the polypeptide found in patients with carcinoma and the peptide found in nephrosis by Dent are identical and are responsible for the false-positive reactions. The nephrosis peptide may be a breakdown product of a larger structure, produced in carcinoma from the tumor itself and in nephrosis from the accelerated catabolism known to occur. The false-positive tests produced in some cases of nephrosis could be due to an antigenic similarity between the group of polypeptides produced in this condition and the group produced in carcinoma.

Treatment of Schizophrenia with Carbutamide.—Carbutamide appears to act as a euphorizing antihallucinogen. Frost *(Brit. M. J.* 1:381, 1958) reported encouraging results in the treatment of schizophrenia with this drug. Sixty patients with schizophrenia were given 1.5 Gm. of carbutamide daily for three days, followed by a rest period of four days. This regimen was repeated for four weeks. Care was taken to see that the patients did not become hypoglycemic during treatment. Of the 60 patients, 45 were discharged recovered or relieved. Four were subsequently readmitted for a further course of carbutamide. In schizophrenia superimposed on mental deficiency or intellectual retardation the psychotic episode was cut short and restoration to home life effected. Hallucinosis sometimes disappeared in a few days, although in others it persisted. Depression often gave place to euphoria by the third week of treatment. Agitated, obsessive, and tense patients did not do so well. Carbutamide rendered paranoid schizophrenics accessible to psychotherapy in a state of clear consciousness unaffected by hallucinosis, depression, or thought blocking. One patient escaped from the hospital, found himself work, and managed to save $200 in two months. No toxic effects were observed during treatment. As glucose was given liberally throughout treatment hypoglycemic attacks were mild.

Art Among the Doctors.—The Medical Art Society held their 16th annual exhibit at Walker's Galleries in London. An artist commenting on it said that most of the exhibitors seemed to have spent their holidays abroad where there was more sunshine than in their own country. Even so, he believed that the colors were a little too bright. Two pieces of sculpture, "Fallen Horse" and "Air Borne" by Dr. G. Konstam of the West London Hospital, stole the show. The latter revealed the dynamic rhythm of an athlete's torso without overanatomizing it, an error into which even the great sculptors of the past sometimes fell. In "Depression," a study by Dr. Jakub Rostowski, a neurologist, of a mental patient with a gaunt figure and bony hands wandering over the keyboard of a piano, the emaciated subject and the facial expression suggested the most abject melancholia. Symbolism was employed in Dr. B. Brooke's "Crucifixion" with three bare crosses.

Serial Cholecystography.—Classic cholecystography gives a positive diagnosis in less than half the cases of suspected biliary tract disorder for which it is used. It may demonstrate the presence or absence of a gallbladder shadow, gallstones, subnormal concentrating power, morphologic abnormalities, and failure to contract after a fatty meal, but it will not give information on the evacuation of the gallbladder or on motor dysfunctions of the biliary tract. Rose *(Brit. M. J.* 1:360, 1958) who has demonstrated the high incidence of disturbances of motor function of the biliary tract, pointed out the necessity for a more accurate preoperative method of diagnosing such conditions. Instead of classic cholecystography, he uses serial cholecystography starting 14 hours after the ingestion of iopanoic acid, with films taken every 10 minutes after a fatty meal for 80 minutes. From the radiographs the volume of the gallbladder and the curve of the angle of erection of the gallbladder are computed. This is the angle between the long axis of the gallbladder and that of the spinal column in the lateral view. This angle is important, as any increase in it has the effect of reducing the apparent length of the gallbladder shadow in the anteroposterior view, and so must be taken into account when calculating the volume. Normally it is between 5 and 15 degrees and depends on the tone and force of contraction of the gallbladder and the resistance to its evacuation.

After the ingestion of a fatty meal the gallbladder shadow normally becomes smaller and in the anteroposterior view moves proximally and rotates externally. In the lateral view the shadow appears to rotate so that the long axis becomes more vertical and the angle of erection increases from 5 to 15 degrees. The normal volume is between 25 and 30 ml., and this may normally decrease by 70% in the first half hour after a fatty meal. Abnormally the gallbladder may be hypokinetic or hyperkinetic and hypotonic or hypertonic. In conditions of obstruction to evacuation the curve of the angle of erection contrasts strongly with that of evacuation. The evacuation is insufficient while the angle of erection increases. If, however, the angle of erection is initially low and fails to increase during the test, the gallbladder is atonic. Of 137 patients with possible disorders of the biliary tract investigated by Rose, 40 had a normal classic cholecystogram, but serial cholecystography showed a dyskinesia which was subsequently proved at operation. The most common finding was a gallbladder that evacuated insufficiently. None of these cases would have been either diagnosed or treated correctly without the use of serial cholecystography and preoperative manometry. Rose has now abandoned classic cholecystography.

Tuberculosis in Cyprus.—The results of tuberculosis surveys in Cyprus were reported on by Constantinides (*Tubercle* 39:59, 1958). The country does not lack medical facilities, as there is a physician to every 1,400 persons. There are five chest clinics, one in each of the principal towns, attached to the district hospitals, whose facilities they use. They give BCG vaccinations to persons exposed to known risk of infection, contacts, and immigrants. There are two tuberculosis sanatoriums, and recently a mobile mass radiography unit was activated. A tuberculosis survey of 4,500 children aged 6 to 12, using the Moro tuberculin test, revealed positive reactors in only 8.3%. A recent WHO survey showed that 90% of the children aged 15 were negative to tuberculin. The first measure in the campaign against tuberculosis was curative, but now the preventive aspect is being considered. It is planned to extend BCG vaccination, to undertake serial tuberculin testing of all children under 12 years, to treat infected children by means of chemotherapy, even for minimal lesions, and to expand the mass miniature radiography service.

Epidemiologic Research.—Students at the London School of Hygiene and Tropical Medicine are now given a course in epidemiologic research. Last year one group investigated the habits and health of London's cab drivers, in whom they found a fairly low rate of sickness and absenteeism. These men are noted for their strongly independent character. It was found, however, that some of the men suffered from chronic respiratory conditions, psychosomatic diseases, and hemorrhoids. Another group investigated the possible harmful effects of long-distance commuting on health. The wear and tear of long-distance commuting, often involving several transfers, is commonly thought to undermine the health, but the students found no statistical correlation between the distance traveled to work and absenteeism. A third group, however, did report that young persons traveling daily from Dagenham to London showed slightly more absenteeism than would be normally expected. The students also studied the complaint of unhygienic food handling. They examined booklets, leaflets, film strips, and posters available to the public and to food handlers but were not impressed. They considered that they lacked the punch of similar transatlantic material. More use of radio and television propaganda was suggested. Although there were films and film strips on the correct handling of food, there was nothing on the incorrect handling. The students made a short film of their own on this.

A special study was made of chronic bronchitis, which is still a major problem in Great Britain. The comparison of a group of middle-aged men with chronic bronchitis and control subjects in the same age group revealed that overcrowding (particularly in childhood), poverty and low social class of the patient's parents, living in towns, and smoking 20 or more cigarettes daily appear to be associated with the disease. Many students were impressed with the seriousness of chronic bronchitis in middle-aged men, the extent of domiciliary nursing care needed at home, and the search by patients for costly panaceas.

Rise in National Health Service Contributions.—Owing to mounting costs the weekly contributions to the National Health Service are to be raised next July by 7 cents for men, 4.5 cents for women, and 2 cents for juveniles. The employer will pay an extra 2 cents. Although small these increases will bring in another $67,500,000. Even so the personal contributions will only pay for just under 20% of the total cost of the health service. It is possible that if contributions are increased in the future they will be based on income rather than on a flat rate for the whole of the population. At present millionaires pay the same contribution as laborers

"Head Hunting" by Physicians.—The General Practice Reform Association, representing young physicians, has submitted a memorandum to the Royal Commission on Doctors' and Dentists' Remuneration. The association refers to the need for general practitioners to collect as many patients as possible, which it refers to as "head hunting," to secure adequate remuneration. This is because the present system of payment is based on the number of patients registered with a physician. Up to 3,500 are allowed, or 5,500 if the physician employs an assistant. The association claims that an established practitioner will take all the legitimate steps he can to keep out a newcomer. There are thus two groups of physicians, those who have large lists of patients and thus earn an amount sufficient for their needs, but at the expense of overwork and rushed work, and those who are underemployed and underpaid because they have small lists. Many physicians with large lists would prefer to have smaller ones but cannot afford to do so. As a result their standards tend to fall, and the public suffers. To remedy this defect the association suggests an immediate reduction in the maximum size of patient lists in the national health service to 3,000 and reduction eventually to 2,000 after 10 years. This would necessitate raising the present capitation fee from $2.46 to $3.65 per patient per year.

British Broadcasting Corporation Criticized.—A BBC broadcast of a discussion on artificial insemination was criticized in an editorial in the *British Medical Journal,* which had previously attacked the BBC's choice of medical programs. It accused the BBC of "pandering to the prevalent interest in the morbid" by a series of telecasts on operations under the title "Your Life in Their Hands." It stated that the BBC is determined to make people's flesh creep by showing details of operations. In a program called "The Unknown Seed," two women and two physicians took part in a discussion on artificial insemination. To ensure privacy the recording was made in the consulting rooms of a London specialist. The *British Medical Journal* stated that such broadcasts fortify the public taste for the morbid and sensational.

CORRESPONDENCE

MUNCHAUSEN SAGA

To the Editor:—The Munchausen saga of Leo Lamphere seems to run a course for not only the edification of the medical journals but the newspapers as well. The last sentence of Dr. Chapman's letter in THE JOURNAL, Feb. 15, 1958, page 823, ends with "permanent custodial care in a mental hospital." The Feb. 18 Cincinnati *Post* carried the following headlined story: "Law finally catches fantastic hospital bum." It tells how he stumbled into the police station in Crawfordsville, Ind., spitting blood. The officers rushed him to the hospital where his identity was recognized 24 hours later. He was then jailed—pending commitment to a state mental institution at Westville, Ind.

On Jan. 20, this same man staggered into the emergency room of the St. Elizabeth Hospital, in Covington, at 3 a. m. He told the intern that he was on a bus on his way to New York and coughed up blood an hour earlier. He had chest pain that radiated to his left shoulder. He gave a history of thrombophlebitis of the left thigh. He was admitted to the medical service. Meperidine hydrochloride was given, which seemed to answer his purpose. The next day, along with routine laboratory work. an electrocardiogram was taken and was normal. Shortly after the doctor on service came in to see him, he was recognized and was questioned accordingly. He denied he was the man suspected and shortly asked if it was all right for him to continue his trip. He was encouraged to do so, but he did not leave until 8:55 p. m.

Later that night, across the Ohio River, at the Jewish Hospital, he staggered into the emergency room and announced to the night supervisor that he had a pulmonary infarct and so told the resident in medicine when he was called to see him. As he was talking to the resident he asked to be excused and went to the men's room. When he came back he spat out a mouthful of blood all over himself and the floor. He was told to go across the street to the Cincinnati General Hospital since a bed was not available at the Jewish Hospital. He wanted to wipe up the floor before he left. He never arrived at the hospital across the street. Interestingly enough, at the next medical conference the medical resident reported the incident, and a grand time was had by all discussing the Munchausen syndrome. By an interesting coincidence the medical resident who was present at Iowa City, and who was one of two doctors who had had him committed to a mental institution in Iowa, was in the audience. He related how the University Hospital was divided into two camps about the patient, who was finally committed. However, he escaped two weeks later!

I have a good hunch that he will escape again and be on the loose for other letters to come.

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MEDIEVAL MEDICAL MANUSCRIPTS

To the Editor:—I am card-listing medieval medical manuscripts (prior to 1600 A.D.) in the collections owned by physicians, other individuals, and public institutions in the United States and Canada. I would appreciate information as to any such manuscripts that are not already listed in the De Ricci Census of Medieval and Renaissance Manuscripts in United States and Canada.

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MISCELLANY

STAPHYLOCOCCIC INFECTIONS IN THE NEWBORN

The headquarters of the American Academy of Pediatrics, 1801 Hinman Ave., Evanston, Ill., has submitted the following statement as of February, 1958:

SPECIAL REPORT OF THE COMMITTEE ON FETUS AND NEWBORN

Prepared with the assistance of the Committee on the Control of Infectious Diseases and Special Consultant Warren E. Wheeler, M.D.

STAPHYLOCOCCAL INFECTIONS IN THE NEWBORN

In the past few years there has been increasing awareness of the problem of infections due to antibiotic-resistant staphylococci. Recent studies have stressed certain aspects which indicate particular hazard for infants in newborn nurseries:

1. While *there* is *no* striking increase in staphylococcal infections in the public at large, there is an appreciable incidence of these infections in hospitalized patients.
2. There is a high carrier rate of antibiotic-resistant strains of staphylococcus in hospital personnel and in long-term patients.
3. Certain strains of staphylococcus appear to become established in a particular hospital, and different hospitals may be repositories for different strains.
4. The development of resistant strains from an originally sensitive one in a case of infection is not a very large problem. The major problem is in cross-infections by resistant strains already existent in the hospital.
5. The chance for development of staphylococcal infection in a hospital is greatly increased in individuals who have decreased resistance to infection in general.

It is apparent from the above that infants in newborn nurseries are in particular jeopardy. Several epidemics of staphylococcal infections in newborn nurseries have already been reported. In these a specific type of staphylococcus is usually found to predominate in the cultures from lesions and is usually present in high incidence in the noses of babies, nurses, and attendants and may be found in the air, dust, or on furniture of the nurseries. Studies have indicated that these infections *do not* come from the mothers but from the hospital environment.

Of great significance is the fact that newborn infants may not develop their infections for several days to weeks after they have returned home. This demands that close surveillance of newborn infants be continued after discharge from the hospital.

Certain recommendations seem justified at the present time

1. There should be strict adherence to the principles of aseptic and antiseptic technic as set forth in the "Standards and Recommendations for Hospital Care of Newborn Infants."
2. All hospitals should establish forthwith a Committee on Control of Cross Infections with one person as the responsible individual. In maternity hospitals and children's hospitals this person would logically be a pediatrician.
3. The Committee should be empowered to make and enforce recommendations for the prevention, investigation, and control of staphylococcal and any other type of infection in the hospital population
4. The Committee in each hospital should arrange for culturing the disease-producing strains and for identifying the "hot" strains in the affected infants and in the contacts and environment of the hospital. Specific classification of the staphylococci will require determination of antibiotic sensitivity and phage typing, and arrangement with local, state, or federal health agencies may be necessary.
5. Every visiting physician should be circularized as to the importance of informing the Committee at once of the occurrence of any infection in a newborn or its mother *after* discharge from the hospital. (In one hospital a postcard technic for ward patients is in use, wherein the mothers are instructed to report back one week following discharge concerning the condition of the baby, particularly as regards skin infections, failure to gain, or other unusual symptoms.)
6. In the case of an outbreak of staphylococcal infection in a nursery, culturing of the lesions of affected babies, the noses of all other babies and all staff personnel should be carried out. The specific measures for control of the epidemic should be worked out by the Committee in conjunction with local public health authorities.
7. Distribution of information concerning staphylococcal infections in the newborn would be expedited if information about outbreaks were reported to the Committee on Fetus and Newborn and the Committee on Control of Infectious Diseases of the American Academy of Pediatrics.
8. It is recommended that all staphylococcal infections in the newborn period be made reportable.

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MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Serum Glutamic Oxalacetic Transaminase in Myocardial Infarction: Diagnostic and Prognostic Value. P. F. Hansen and T. Laursen. Danish M. Bull. 4:248-251 (Dec.) 1957 (In English) [Copenhagen].

Two or more serum glutamic oxalacetic transaminase (SGO-T) determinations were made in 147 patients admitted with the diagnosis of certain or suspected myocardial infarction. Increased SGO-T values were found in 84 of the 89 patients with certain myocardial infarction. Twenty-three of the 84 patients died; autopsy in 21 cases showed recent infarction in all. The values were increased in from one-third to one-half of the clinically doubtful cases. SGO-T determinations in clinically and electrocardiographically doubtful cases are regarded as of considerable discriminatory diagnostic value. This also holds for patients suspected of having myocardial infarction but for whom the diagnosis was clinically excluded. The diagnostic value of the SGO-T determinations lies in the possibility of early diagnosis. The early mortality shows good correlation with the height of the SGO-T determination, but the prognosis in clinically certain cases does not seem to be better evaluated by this test alone than by the criteria used hitherto, such as high fever and leukocytosis.

Auricular Infarction. J. M. Kaufman, G. Timmis and J. Forest. J. Michigan M. Soc. 57:59-62 (Jan.) 1958 [St. Paul].

The authors found only two reports in which the correct diagnosis of infarction of the atrium was made during life. They present a report on a third patient in whom acute atrial infarction was correctly diagnosed before the patient died and was confirmed at autopsy. The patient was a 62-year-old man who was admitted to Harper Hospital on July 27, 1956, complaining of a sudden onset of nausea and vomiting 3 hours prior to admission, followed by pain in the anterior part of the left side of the chest, which radiated into the left shoulder and arm. The pain persisted in spite of therapy with glyceryl trinitrate (nitroglycerin). On admission, however, the patient obtained considerable relief from the administration of morphine and atropine. He claimed to have had 3 similar episodes 8 years ago but apparently had not been seen by a physician at that time. The admission electrocardiogram was interpreted as follows: complete heart block, acute auricular myocardial infarction, and acute posterior myocardial infarction. On the evening of admission there was conversion to a normal sinus rhythm. Electrocardiograms taken on July 28 and July 29 showed progressive changes of acute posterior myocardial infarction in the presence of a normal sinus rhythm and occasional ventricular premature beats. On July 30 a second-degree heart block and Wenckebach's phenomenon with trigeminy were observed. At the end of the tracing, beginning auricular fibrillation was recorded. By July 31 the rhythm was again found to be basically regular with frequent supraventricular extrasystoles and a wandering pacemaker. Although the patient's hospital course had been relatively uneventful, on the sixth hospital day he suddenly cried out in pain and was found to be in shock, pulseless, and cyanotic. A few minutes later he was pronounced dead.

Involvement of the atrial myocardium by infarction was generally thought to be exceedingly uncommon until 1942, when Cushing and his associates reported 31 instances of it in a series of 182 cases of myocardial infarction. The incidence of atrial infarction (either as an isolated finding or as a concomitant with ventricular infarction) varies, according to several larger series reported, from less than 1% to 24.5%. The average seems to be in the vicinity of Cushing's reported 17%. Since there is no suggestive symptom complex, the diagnosis of atrial infarction must depend on electrocardiographic evidence alone. This involves primarily the detection of various arrythmias, which are usually transient and rapidly changing. The variations in the atrial mechanism include fibrillation, flutter, extrasystoles, tachycardia, sinus arrest, wandering pacemaker, and atrioventricular nodal rhythm. Disturbances in conduction are not uncommon. Any degree of heart block, including Wenckebach's phenomenon, may be detected. Most investigators agree that deviation of the PTa segment, with or without a changing contour in the P and PTa

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The place of publication of the periodicals appears in brackets preceding each abstract.

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waves, is also indicative of atrial infarction. The P and PTa waves may be broadened, slurred, or notched, or a change in amplitude may be detected.

Pulseless Disease, Takayashus Syndrome: Arcus-Aortae Syndrome. P. Ollendorf. Nord. med. 58: 1739-1741 (Nov. 7) 1957 (*In Danish*) [Stockholm].

To date, 99 cases of pulseless disease have been published, 14 of them from Scandinavia. The disease occurs predominantly in young women. It is a chronic arteritis which affects especially the large arteries of the aortic arch, causing a gradual closing and resulting ischemia of the upper extremities, head, and neck. In some cases the disease also attacks the arteries to the lower extremities. The etiology is unknown. The prognosis is unfavorable. The disease is slowly progressive. Duration of life is usually from 5 to 10 years after recognition of the disease; survival of over 25 years has been recorded. In the case described, which is the 100th in the literature, a woman, aged 41 years, developed hemiparesis 4 years earlier. She now presents signs of vascular closure and consequent ischemia, atrophy of the jaws with loss of teeth, stenosis bruit over the carotids and weak or absent pulsation in the arteries of the head and arms, weak or absent pulsation in the femoral arteries, intermittent claudication in both lower extremities, and violent attacks of precordial pain, with changes in the electrocardiogram pointing to ischemia of the myocardium. Reduced blood supply to the lower extremities has not previously been described in women with Takayashu's syndrome. Defective [illegible]od supply to the heart in this disease has been [illegible]en only once before.

BCG Vaccination in a Tuberculosis Prevention Program. S. R. Rosenthal. Minnesota Med. 41:8-12 (Jan.) 1958 [St. Paul].

A healed primary tuberculous infection in human beings, in the lung or elsewhere, confers an increased resistance against virulent reinfection. This is attested by a decreased incidence of disease, a greater localization, and a better prognosis. Paradoxically, however, even in healed infection, the possibility that viable organisms may produce active disease at a later date is present, since in many instances they may remain viable in the body. It is for this reason that artificial immunization with an organism such as BCG, which can be controlled, would be highly desirable when its potentialities as a vaccine, though not as great, approach those of the virulent organisms.

Recent clinical studies with BCG in the dried form, which is produced by Research Foundation and the University of Illinois and is well standardized before distribution, showed that it is a highly effective vaccine for the prevention of tuberculosis. It should never be considered as a substitute for the time-honored and time-tested principles of tuberculosis control but as an adjunct to these methods. BCG vaccination is recommended for infants and children in areas of high incidence and for those persons who will be unavoidably exposed to tuberculosis, such as medical and nursing students, members of tuberculous households, and persons admitted to penal and mental institutions. These recommendations have been made by the American Trudeau Society, which is the medical branch of the National Tuberculosis Association, and the U. S. Public Health Service and have been recognized by the Council on Drugs of the American Medical Association.

Occurrence of Adenovirus Infections in Civilian Populations. W. S. Jordan Jr. A. M. A. Arch. Int. Med. 101:54-59 (Jan.) 1958 [Chicago].

This paper reviews the data relative to the frequency of occurrence of adenovirus infections in civilian populations. In marked contrast to their behavior in recruit populations, the adenoviruses have been related etiologically to but a fraction of the respiratory illnesses experienced by different segments of the civilian population. Infections due to type 4 and type 7 adenoviruses, particularly type 4, have been and are infrequent in civilians. Type 3 adenovirus has most often been responsible for epidemics in civilian groups.

Serologic studies indicate that many persons have been infected with adenoviruses. By the age of 5 years, 50% of children have been infected with at least one type. Infections continue to occur throughout adolescence, and nearly all adults have antibodies to at least one type of virus. During a given respiratory season, however, only approximately 4% of the civilian population is infected with an adenovirus, and these agents account for but from 0.5% to 3% of the respiratory illnesses. It is estimated that use of a completely effective adenovirus vaccine would result in only a 6% reduction in the number of common respiratory illnesses experienced by an average child during the first 10 years of life. Present evidence does not warrant adenovirus immunization of such civilian groups as families or university student populations.

Perforation of Peptic Ulcer Following Paracentesis in Patients with Cirrhosis. S. S. Koide, E. C. Texter Jr. and C. W. Borden. Am. J. Digest. Dis. 3:24-37 (Jan.) 1958 [New York].

During a 32-month period, from January, 1954, through August, 1956, 252 consecutive patients were admitted to the Veterans Administration Research Hospital. These patients had adequate clinical, biochemical, or morphologic evidence for the diagnosis of cirrhosis. Thirteen of them had a peptic ulcer, an incidence of 5.2%. The incidence of peptic ulcer is higher in patients with cirrhosis than in the general hospital population, and this incidence increases in relation to the severity of the cirrhosis. Four of the 13 patients had ascites. Paracentesis was carried out in 2 of these patients, and in each instance a perforation developed after the paracentesis. A third patient who had minimal ascites also died of a perforated duodenal ulcer. The fourth patient with ascites died of a bleeding ulcer.

The authors suggest that a sudden decrease in intra-abdominal pressure secondary to the removal of the ascites would greatly increase the pressure difference between the lumen of the intestine and the abdomen. This pressure change would be ample to perforate the thin base of an ulcerative lesion. Successful management of this emergency is based on the diagnostic consideration of perforation in a patient in whom shock or abdominal pain develops shortly after paracentesis. Diagnostic aids include performance of a diagnostic tap and roentgenologic examination of the abdomen for free air. If the diagnosis can be made, surgical intervention is indicated, since the mortality rate is certain to be less after surgical treatment than after expectant medical care.

Hypernephroma from Internal Medical and Surgical Viewpoint. G. Jönsson and E. Truedsson. Nord. med. 58:1622-1625 (Oct. 24) 1957 (In Swedish) [Stockholm].

From 1940 to 1954, 175 patients with nephroma were admitted in Lund—114 in the surgical department and 61 in the medical department. The classic triad of symptoms in nephroma consists of hematuria, pain, and palpable tumor. Not all these symptoms were present in every case. Diagnosis can be difficult. It is most easily made when hematuria is the initial symptom. Macroscopic hematuria calls for a complete urologic examination, even though the hematuria occurs only once. General symptoms, not easily interpreted, in the form of fatigue, poor appetite, and emaciation, together with increased sedimentation rate and fever, characterized the medical cases. Demonstrable metastases when diagnosis was made were found in one-half of the medical cases and in one-fourth of the surgical cases. Urography in 104 of the surgical cases revealed renal changes in 102 cases; in 1 case renal angiography revealed a nephroma of walnut size; and in 1 case repeated urography showed a nephroma. In the medical cases the diffuse clinical symptoms did not motivate intravenous urography till late. The more advanced stage of the disease in the medical cases is reflected in the prognosis: only one-eighth of the medical patients survived after 5 years as against one-third of the surgical patients. The prognosis might be improved if patients with macroscopic hematuria were given at once a complete urologic examination and if in the patients with diffuse symptoms the possibility of nephroma were considered. At present the prognosis in nephroma is poor.

Further Clinical and Investigative Uses of Liver Biopsy: An Analysis of Five Hundred Twenty-Seven Biopsies. K. L. Stuart, G. Bras, S. J. Patrick and J. C. Waterlow. A. M. A. Arch. Int. Med. 101: 67-83 (Jan.) 1958 [Chicago].

At the University College Hospital of the West Indies the authors performed 527 biopsies, specimens of liver tissue being taken from 330 patients with the following conditions: kwashiorkor, marasmus, veno-occlusive disease of the liver, vomiting sickness, diabetes mellitus, various neuropathies, nephrosis, sickle-cell anemia, and unexplained hepatomegaly, splenomegaly, jaundice, pyrexia, and anemia. The tissue obtained for biopsy was examined histologically in all cases, and in some cases chemical examination of the liver tissue was also performed. The chemical studies included nucleic acids and protein, water and fat content, and glycogen estimations. In the patients with malnutrition it was shown (1) that the degree of fatty infiltration is no indication of the severity or probable outcome of the disease, (2) that hepatic protein depletion is severe in these patients but that its degree cannot be quantitatively correlated with the clinical picture or prognosis, and (3) that fatty infiltration does not apparently interfere with the ability of the liver to store glycogen. Occlusion of the smaller and medium-sized branches of the hepatic veins is responsible for the hepatomegaly and ascites found clinically in veno-occlusive disease. The prognosis of veno-occlusive disease is linked with the severity of the associated hepatocellular damage. Serial biopsies made it possible to define more accurately the natural history of this disease. In patients who recover, the histological appearances of the liver return to normal. When the disease advances to the chronic stage, a progressive nonportal cirrhosis is found in biopsy specimens.

The histological liver changes in diabetes are minimal and cannot be correlated with the response to treatment, clinical hepatomegaly, or alteration of liver-function tests. The hypoglycemia of vomiting sickness is associated with severe depletion of hepatic glycogen, which is rapidly restored by successful glucose therapy. There is a high incidence of fibrosis of the liver in patients with sickle-cell anemia, and a possible etiological relationship is suggested. Because of the frequently mixed nature of hepatic cirrhosis in the tropics and the variability of the clinical syndromes presented, biopsy of liver tissue is a useful and often essential tool for establishing a correct diagnosis. Its advantages in unexplained hepatomegaly, jaundice, and splenomegaly have been demonstrated. It is also pointed out that biopsy of liver tissue often makes it necessary to alter an apparently firmly established clinical diagnosis. The simultaneous histopathological and chemical examination of portions of the tissue obtained at biopsy has advantages.

Alcohol Pain in Hodgkin's Disease. J. Kühböck and E. E. Reimer. Wien. Ztschr. inn. Med. 38:454-457 (Nov.) 1957 (In German) [Vienna].

The symptomatology of Hodgkin's disease varies from patient to patient, the symptoms being largely determined by the organ that is involved, but there are also symptoms which cannot be explained on this basis, and "alcohol pain" is one of these. It has been observed even after the consumption of minute quantities of alcohol, such as that in alcohol-filled bonbons. Opinions differ as to the incidence of this pain. The authors studied this symptom in 30 patients with Hodgkin's disease who were admitted to their clinic during the course of the last year. Each patient was first asked whether he had experienced pain after taking alcohol. Then the test was made, the alcohol being given either by mouth or intravenously. In evaluating the results, care was taken to differentiate between local and general sensations, since only local pain reactions can be regarded as a positive outcome of the alcohol test. Inquiry about pain reactions to the intake of alcohol revealed only 1 woman who stated that she had had pain in the right arm and leg a few minutes after drinking a glass of beer. The intravenous alcohol tolerance test gave a negative result in this patient. Three other patients gave a positive reaction to the intravenous alcohol tolerance test. The oral alcohol test was positive in 1 patient, who experienced severe pains in 1 leg, presumably caused by retroperitoneal lymphomas. These pains occurred 45 minutes after the oral intake of the alcohol. The intravenous alcohol test was negative in this patient. Thus, the alcohol pain was revealed either by history or by test in 5 of the 30 patients (16.6%). The authors feel that, if the alcohol test is positive, it represents definite proof of Hodgkin's disease, but a negative outcome does not speak against this diagnosis. The tests should be made by mouth as well as by intravenous injection, because when one is negative the other may be positive. The positive test helps to differentiate Hodgkin's disease from other diseases of the lymph nodes, such as lymphomatic leukemia and tuberculosis of the lymph nodes.

SURGERY

Pulmonary Sequestration: A Review of the English Literature with a Report of Four Cases. A. B. Eaker, J. L. Hannon and S. W. French III. Am. J. Surg. 95:31-39 (Jan.) 1958 [New York].

A review of the English literature revealed that in the past 10 years many case reports of a congenital syndrome resulting from a disassociated mass of nonfunctioning pulmonary tissue associated with an abnormal pulmonary artery have been published. The syndrome has now become accepted as a clinical entity by surgeons and pathologists; it is referred to as "pulmonary sequestration" and is further divided into extralobar and intralobar types. Extralobar sequestration refers to complete ectopia or an extra lobe, occurring either above or below the diaphragm. Intralobar sequestration, over 100 cases of which were collected from the literature, although functionally dissociated is incorporated within the visceral pleura of the affected lobe. This type results in the symptoms and physiological aberrations which have made pulmonary sequestration a clinical entity and a surgical problem. Most of the authors concur with Pryce in the concept of the origin of the bronchopulmonary mass and its correlation with the anomalous artery from the aorta. The age of onset of symptoms is usually in the first or second decade, and surgical intervention is usually performed by the age of 30 years. Most patients have a history of symptoms referable to chronic recurring respiratory infection, and erroneous diagnosis of bronchiectasis, pneumonitis, pneumonia, empyema, lung abscess, and congenital disease have been made. There may be intermittent cough, chest pain, fever, chills, and hemoptysis. The chest roentgenogram is the principle measure in the diagnosis of intralobar pulmonary sequestration. Surgical excision is the treatment of choice.

The author reports 4 cases of the intralobar type of pulmonary sequestration in a 6-year-old girl, a 25-year-old woman, and 2 men aged 24 and 39 years respectively. A left thoracotomy was performed, and resection of the sequestered cystic segment was carried out in the 2 female patients and in the younger men. In the other man, multiple thoracotomies were performed for excision of congenital cystic areas. There were recurrent symptoms from infection, and ultimately lobectomy was necessary. Unless there is a question of minimum pulmonary reserve, lobectomy rather than partial resection should be performed on all patients with intralobar pulmonary sequestration. Certain cases diagnosed early, before infection has developed, may lend themselves to a clean segmental resection of the sequestrated portion; the operative morbidity and mortality should then not be much more than that of exploratory thoracotomy. More careful attention should be given preoperatively to the symptoms and roentgenological findings which are characteristic of intralobar pulmonary sequestration. At surgical intervention, special attention should be given to dissection in the vicinity of the inferior pulmonary ligament and the diaphragmatic surface of the lower lobe, with a view to identification of aberrant vessels arising from the aorta. These should be carefully ligated before cutting.

The incidence of intralobar pulmonary sequestration has not become established. It is more frequent than was previously thought. Being a developmental anomaly, it may be found in association with other congenital aberrations of the diaphragm. This gives the condition additional importance with the increasing trend of repairing diaphragmatic (hiatal) hernia from above. Resection of the sequestrated portion of the lung can be accomplished in conjunction with repair of the diaphragmatic hernia.

The Nature and Treatment of the Postcommissurotomy Hyponatremic Syndrome. G. J. D'Angelo, H. V. Murdaugh Jr. and W. C. Sealy. Surg. Gynec. & Obst. 106:87-91 (Jan.) 1958 [Chicago].

After the introduction of surgical corrective procedures for mitral stenosis, there evolved 2 clinical patterns which have been referred to as the "postcommissurotomy syndrome." One syndrome is characterized by chest pain and recrudescence of symptoms; the other is characterized by oliguria, water retention, hyponatremia, and hypochloremia. The authors discuss the second, which is referred to as the "postcommissurotomy hyponatremic syndrome." They observed this syndrome in 5 of 21 patients who underwent commissurotomy. For control purposes, complete data were obtained on 8 consecutive postcommissurotomy subjects. It could not be predicted preoperatively which patient would develop this syndrome after cardiac surgery. In general, however, the occurrence of hyponatremia appeared to correlate with the complexity of the patient's course prior to surgery. In those patients who developed the syndrome, the serum sodium concentration and the plasma osmolarity decreased appreciably. There was a decrease of 7 to 20 mEq. per liter in the serum sodium and a drop of 6 to 20 milliosmols (mOsm.) per liter in the plasma osmolarity. The serum potassium rose in 4 of the 5 patients from a preoperative mean of 4.5 mEq. per liter to a postoperative mean of 5.1 mEq. per liter. In the control series the serum sodium and serum potassium levels and plasma osmolarity remained essentially unchanged after surgery.

Treatment by the administration of absolute alcohol (20 to 50 ml.) resulted in a marked increase in the urinary output with, a return of the plasma osmolarity and serum sodium, serum chloride, and serum potassium levels to normal. Studies of urinary electrolyte excretion during the phase of increased urinary output suggest a true water diuresis with conservation of sodium and potassium. The possible mechanism of the phenomenon is discussed. These studies indicate that alcohol is an effective therapeutic tool in the management of the postcommissurotomy hyponatremic syndrome. The importance of fluid restriction after mitral commissurotomy is stressed.

Hiatus Hernia, Peptic Esophagitis, and Peptic Ulcer. G. M. Carver Jr. Surg. Gynec. & Obst. 106:77-81 (Jan.) 1958 [Chicago].

Of 150 patients with peptic esophagitis studied during the past 20 years, 120 had an associated hiatus hernia and 30 had hiatus hernia, esophagitis, and duodenal or gastric ulcer. The mean age for the group was 56 years, the oldest patient being 71 years and the youngest 31 years of age. There were 23 men and 7 women. Medical management of patients with this triad was satisfactory in only 4 of 30 cases. Results of subtotal gastric resection without repair of hiatus hernia were not rewarding in 5 patients. In 7 patients peptic esophageal stenosis developed, requiring resection in 4 because of unsuccessful and prolonged attempts at medical management. Subtotal gastric resection with transabdominal anatomic repair of the hiatus hernia is advisable early in the course of the disease to prevent esophageal stricture formation. Fifteen patients so treated had excellent postoperative results without recurrence of the hiatus hernia. The anatomic technique of transabdominal repair of esophageal hiatus hernia is described, with emphasis on the preservation of the phrenoesophageal ligament and anatomic closure of the esophageal hiatus.

Subtotal Gastric Resection for Benign Peptic Ulcer: A Follow-up Study of Three Hundred Fifty-Three Patients. N. Hastings, J. A. Halsted, E. R. Woodward and others. A. M. A. Arch. Surg. 76:74-80 (Jan.) 1958 [Chicago].

In 1950 a program was established at the Wadsworth Hospital, Veterans' Administration Center, Los Angeles, Calif., to investigate the results of various methods of treatment for peptic ulcer. The present report is a study of patients who were treated by a subtotal gastric resection from 1947 through 1954. During this 8-year period, more than 6,000 patients were discharged with a final diagnosis of a benign peptic ulcer. In studying the long-term results of subtotal gastric resection for benign peptic ulcer, the 1,048 patients who had this operation during the 8-year period were requested to report for follow-up examination, provided the operation had been performed at least 1 year prior to such examination. Three hundred fifty-three patients, or 34% of those who had this type of surgical procedure, were seen. The duration of follow-up varied from 1 to 7 years and averaged 2.5 years. All patients were interviewed by a medical-surgical team, with liberal use of x-ray and laboratory aids. Of the patients with duodenal ulcer, 68% had a satisfactory result (excellent or good), and 23% had an unsatisfactory result (fair or poor); in 9% recurrent ulceration developed (failure). In patients with benign gastric ulcer, the results were satisfactory in 78% and unsatisfactory in 21%, and 1% had recurrent ulceration.

The patients' opinions of the operative result frequently failed to correlate with the physicians' evaluations. Malnutrition was a frequent cause of an unsatisfactory clinical result, 55% of such patients having excessive weight loss. Dietetic study indicated that the weight loss was due to a greatly diminished daily caloric intake. The difference in marginal ulcer rate accounted almost entirely for the better results obtained in patients with gastric ulcer. While the recurrence rate of 9% in the duodenal ulcer group seems high, several reports of other investigators cite similar results. It is concluded that the marginal ulcer rate after the usual subtotal gastrectomy for duodenal ulcer has been performed is higher than has generally been recognized.

Epidural Hematoma. M. Tengesdal. Nord. med. 58:1569-1573 (Oct. 17) 1957 (In Norwegian) [Stockholm].

In the diagnosis of epidural hematoma the occurrence of a well-marked lucid interval is significant. A short lucid interval usually means that the disease runs a rapid course. In the 11 cases reported, the lucid interval varied from ½ hour to 9 days. The 6 patients with lucid interval of an hour or less all died; 3 died immediately after admission, and in the other 3, with symptoms of decerebrate rigidity, operation was of no avail. The 5 surviving patients had a longer lucid interval. The possibility of epidural hematoma cannot be excluded because there is no lucid interval. Findings at autopsy show that epidural hematoma not infrequently occurs together with other grave intracranial injuries. In this group the general symptoms of nausea, vomiting, headache, bradycardia, and changes in blood pressure were of little value in diagnosis. The initial brief loss of consciousness in epidural hematoma is probably due to brain concussion. Loss of consciousness after a transitory lucid interval is an early sign. Semicoma and coma are danger signs. Five of the 6 patients who died were in coma, and 1 patient was in semicoma. Of the 5 who recovered, 1 patient was somnolent, 1 was in semicoma, and 4 were soporous. There were symptoms from the oculomotor nerve in all cases. Symptoms of disease of the pyramidal tracts come early and often and are ascribed partly to the hematoma, partly to herniation of the temporal lobe. Total areflexia and decerebrate rigidity are terminal signs. The high mortality in epidural hematoma can be reduced by earlier diagnosis and treatment. In case of suspected hematoma the patient should be admitted at once to the nearest hospital, and if there are grave signs of herniation, trepanation should be done there. If hemostasis gives trouble, the patient can after careful tamponade be sent to a special division. Preliminary decompression considerably improves the patient's chances. Carotid angiography and electroencephalography may aid in the diagnosis in cases of longer duration.

Ventriculoplasty for Cardiac Aneurysm. C. P. Bailey, H. E. Bolton, H. Nichols and R. A. Gilman. J. Thoracic Surg. 35:37-67 (Jan.) 1958 [St. Louis].

The authors report on 9 patients with cardiac aneurysm who were operated on and of whom 8 survived in a much improved condition. The cardiac aneurysm usually involved the left ventricle and was of 3 types with respect to causation. One patient, a 7-day-old female infant, had a cardiac aneurysm due to congenital malformation, often described under the term "diverticulum." Two patients, 1 a 31-year-old woman and 1 a 38-year-old woman, had a cardiac aneurysm resulting from trauma produced by cardiac surgery for mitral and aortic stenosis, the aneurysmal sac being formed by extracardiac structures, especially the pericardium (false aneurysm). The remaining 6 patients, between the ages of 56 and 65 years, had a cardiac aneurysm resulting from weakening and bulging of a relatively localized area of myomalacia of the heart wall after myocardial infarction. Surgical treatment amounted to a subtotal resection of the aneurysm without the use of a cardiopulmonary bypass, enough of the mixed muscular and fibrosed basal tissue of the scar of healing being preserved to permit reconstruction of a ventricular chamber of approximately the normal size and shape for the particular patient. The appropriate term "ventriculoplasty" has been coined for this procedure. The technique has been described in a paper published in THE JOURNAL (158:915 [July 16] 1955).

Only 1 of the 9 patients died; he was the 2nd patient operated on for an aneurysm occurring after myocardial infarction, and death resulted from gross embolization at the moment of compression of the base of the aneurysmal sac which contained massive clotting. To prevent inadvertent dislodgement of such clotted material during the manipulations incident to the removal of the aneurysmal sac, a ventricular clamp armed with strips of Ivalon sponge was applied at the limits of the infarcted area into the normal muscle, a large incision was made into the infarcted area, and the wound was allowed momentarily to bleed. By this method any contained clots would have been "flushed out." Since adopting the "flush-out" technique, and by continuing the use of the principle of ventriculoplasty (tailoring the ventricle) rather than attempting totally to excise all scarred tissue, there has been a gratifying surgical and clinical response from each patient so operated on. In view of the fact that no "revascularization procedure" was included in the operative technique, it is believed that all observed benefit was due to the removal of the physiological burden imposed by the paradoxically pulsating sac itself. With the increased incidence of surgical ventriculotomy, more ventricular aneurysms of traumatic (false) type may be expected to occur in the future. While every effort should be made to prevent their occurrence, they may be corrected with relative safety by the technique described.

In view of the gloomy outlook for patients with symptom-producing postinfarctional ventricular aneurysm, and the rather dramatic response to appropriate operative intervention, surgical consideration is strongly urged for these common, although less often recognized, sequelae of coronary arterial disease. Knowledge that an effective surgical method of treatment exists will stimulate an increased awareness on the part of the internist that such a lesion may exist. The diagnosis may be established with certainty by appropriate opacification techniques, and the patients may be referred for surgical treatment at a somewhat earlier stage, when the chances for survival and clinical cure will be greater, than was the case with the patients reported on, who were in the near-terminal or preterminal state.

Induced Cardiac Arrest (Cardioplegia) in Open Heart Surgical Problems. C. R. Lam, T. Gahagan, C. Mota and E. Green. Surgery 43:7-13 (Jan.) 1958 [St. Louis].

The authors began to study methods of producing cardioplegia in 1952. It was found that a solution of potassium chloride injected into the left ventricle produced arrest. Since they had no pump-oxygenator at that time, resuscitation had to be obtained by manual systole. This method of reviving the heart was undoubtedly largely responsible for the high incidence of ventricular fibrillation during the recovery phase. The authors then investigated the value of acetylcholine as a cardioplegic agent and found that ventricular fibrillation was less frequently encountered than during cardiac massage. It was also noted that the ideal way to resuscitate the heart was to perfuse the coronary arteries with oxygenated blood. When a pump-oxygenator of the bubble type became available to the authors early in 1956, they began to use it in open heart procedures, and the heart has been arrested with acetylcholine during the cardiotomy in all the 88 patients reported here. Fifty-eight of the operations have been for closure of ventricular septal defects, and 30 have been for correction of a great variety of congenital and acquired lesions. The method appeared to be safe and valuable for use in these open heart operations. The high death rate of 33% in patients operated on for closure of ventricular septal defects has been largely due to the fact that this group included 9 small infants who were operated on because they had ceased to grow and appeared to be near death. In contrast, in the group of children over the age of 3 years, the mortality rate was less than 5%.

Surgical Applications of Anterior Percutaneous Left Heart Puncture. D. G. Greene, J. T. Sharp, G. T. Griffith and others. Surgery 43:1-6 (Jan.) 1958 [St. Louis].

The suprasternal notch approach for left atrial puncture may be easily combined with direct anterior puncture of the left ventricle to permit measurement of pressure gradients across the mitral and aortic valves. For left atrial puncture the authors used the technique of Radner. A flexible needle, 18 cm. long and 0.8 mm. in outside diameter, is passed from the suprasternal notch posterior to the sternum and anterior to the trachea into the left atrium. It usually pierces the arch of the aorta and frequently the pulmonary artery as well on its way into the atrium. If so, pressures are measured in each of these structures on the way in and on withdrawal. If not, it is usually a simple matter to reinsert the needle into either of the great vessels if desired. The patient is supine with the neck extended and the head turned to the left. The needle is inserted in the midline. Once it is in place in the left atrium a second needle, usually a long, thin-walled 18 needle with a solid obturator, is inserted into the left ventricle through the anterior part of the chest wall. The chest is entered 1 to 2 cm. medial to the apex impulse in the 5th or the 6th left intercostal space, and the needle is directed medially, dorsally, and cephalad at an angle of 45 degrees with each of the major planes of the body. Once the cardiac impulse is felt with the tip, the needle is advanced quickly. The left ventricle is usually entered directly, or, less frequently, the right ventricle is pierced on the way into the left ventricle. It is usually easy to tell which ventricle one is in by the color of the blood. In case of doubt the systolic pressure may be compared with the systolic pressure in the systemic and pulmonary arteries, or a sample may be withdrawn for gas analysis.

The described techniques are well adapted for combination with catheterization of the right side of the heart and measurement of cardiac output by the direct Fick procedure. There have been few complications. In 18 patients whose pericardiums were opened immediately after the procedure, no bleeding point was seen at the time of surgery. Usually 75 to 100 ml. of bloody pericardial fluid was found. In only 1 case was this amount exceeded, about 150 ml. being present. Two patients experienced hemoptysis after the procedure. In 1 patient this necessitated postponing the scheduled thoracotomy, while in the other the bronchi were cleared of blood by bronchoscopy. The 5 patients who did not undergo thoracotomy immediately after the procedure all had some chest pain for 1 to 4 days. Two had low-grade fever for the same period. The authors found that the combination of suprasternal puncture with direct anterior puncture of the left ventricle has the following advantages over catheterization of the left side of the heart: supine position, relative freedom from untoward sequelae, and lack of need for fluoroscopic control.

Ligation of the Inferior Vena Cava for Thromboembolism. W. A. Dale. Surgery 43:24-44 (Jan.) 1958 [St. Louis].

Dale advocates nonoperative management of venous thrombosis and pulmonary embolism, reserving vein ligation for cases where anticoagulants are contraindicated or have failed. He reviews observations on 16 patients who eventually required vena caval ligation for thromboembolism. Thirteen of the 16 patients were operated on via the extraperitoneal approach from the right. Three were approached transperitoneally, once in order to remove the ovaries, once in order to explore the iliac veins, and once early in the series as a purely elective approach. The author comments on anomalies of the inferior vena cava, the collateral circu[illegible]on, and venous pressure studies. In the post[illegible]erative management the prevention of edema is mportant, and the following measures are recommended: elevation of foot of bed; Ace bandages whenever out of bed; graded walking when pain permits; restriction of ambulation if edema occurs; restriction of sitting or standing; aeropulse boots; and contour chair. Prevention of further thrombosis is facilitated by the administration of anticoagulants and by thrombectomy if it occurs. Pain control is aided by medication and elevation of the egs. Maintenance of muscle power is effected by a program of weighted exercises for calves and thighs.

There was no operative mortality or further embolism in the 16 patients. While early postoperative leg edema was usual, the late leg complications proved to be minor if the legs were carefully managed. Three of 9 patients followed beyond 10 months have some edema or ulcer of the legs, although no patient has been incapacitated. Although anticoagulant drug therapy is advocated for venous thrombosis and/or pulmonary embolism in general, inferior vena caval ligation (rather than superficial femoral vein ligation) should be reserved for (*a*) failure of anticoagulant therapy, (*b*) contraindication to anticoagulants, and (*c*) thrombosis of pelvic veins (iliac, ovarian, prostatic, and so forth). Rare indications include septic pelvic phlebitis and phlegmasia cerulea dolens.

Pleurectomy for Recurrent Spontaneous Pneumothorax. P. A. Thomas and P. W. Gebauer. J. Thoracic Surg. 35:111-117 (Jan.) 1958 [St. Louis].

The authors report on 11 men and 3 women, between 19 and 41 years of age, with recurrent spontaneous pneumothorax who were treated by thoracotomy, lung repair, and partial parietal pleurectomy. Excision of the parietal pleura was adopted to promote fixation of remaining lung tissue to the chest wall. The presence of multiple blebs and bullae, either in localized areas or generalized over the surface of the lung, was the predominant gross surgical pathological lesion which was found in most of these patients. Excision of the apical parietal pleura in the region of the disease process was performed in the first patient. Such a limited pleurectomy is now considered inadequate. The more complete operation, consisting of the removal of the parietal pleura over the chest wall and superior mediastinum, except for the diaphragmatic and pericardial reflections, is usually not difficult and was performed 14 times in 13 patients.

Pleurectomy is designed to produce 2 significant changes for the patient: (1) to obliterate the pleural space and prevent recurrence and (2) to provide revascularization of the peripheral portion of the lung in which pathological changes are usually most marked. There were no postoperative recurrences of spontaneous pneumothorax. Eight patients were asymptomatic. One of these required bilateral surgical intervention. In 3 patients the lung which was operated on was asymptomatic and stable as revealed by chest roentgenogram; however, one or more episodes of spontaneous pneumothorax of the unoperated lung occurred. These patients may require a second-stage surgical procedure on the remaining unstable lung. The postoperative course was entirely uneventful after 9 operations. A somewhat prolonged air leak was present in 2 patients, but recovery was uneventful. A minimal spontaneous pneumothorax of the unoperated side of the chest occurred in 1 patient, but recovery resulted without treatment. A small residual postoperative apical pneumothorax was observed in 2 patients. Of the 15 operations performed, only 1 resulted in a seriously complicated course with partial atelectasis of the lung which had been operated on. Bronchoscopy and thoracentesis were required as corrective measures. The characteristic preoperative findings of blebs, bullae, and parchment-like changes in the patients were similar to some of the gross changes of pulmonary emphysema. They were suggestive of peripheral pulmonary ischemia. If they were to be considered as a precursor of later emphysema with primary or secondary vascular changes, pleurectomy should be performed more frequently than it has been in the past.

Spontaneous Bilateral Chylopneumothorax: A Case Report. R. A. Dillard and R. B. Perkins. J. Thoracic Surg. 35:91-96 (Jan.) 1958 [St. Louis].

The authors report a case of spontaneous bilateral chylopneumothorax in a 25-year-old man who was admitted to the Veterans Administration Hospital in Birmingham, Ala., with a chief complaint of shortness of breath for 1 week and dyspnea for 24 hours. Fluoroscopy revealed a fluid level up to the 4th intercostal space on the right. Thoracentesis on the right yielded 1.400 cc. of milky white fluid. The dyspnea decreased. The initial chest roentgenogram revealed the presence of air and fluid in both pleural spaces with partial collapse of both lungs. Intercostal catheter suction on the right was instituted but did not reexpand the lung. The chylous fluid continued to drain in large amounts. More air began to accumulate in the pleural space on the left, and dyspnea increased. Intercostal catheter drainage on the left removed 2 liters of chyle and much air. Ventilation improved. With clearing of the pleural space on the right of all fluid, enlargement of the superior mediastinal shadow on the right was observed on the chest roentgenogram.

Thoracotomy was performed and revealed that all pleural surfaces on the right were extensively replaced by tumor growing in sheets, with some areas thickened to form trabeculations. The lung was about 75% collapsed, affecting all 3 lobes equally. The visceral pleura was replaced by a thin layer of this tissue, which puckered the lung in areas. There were many minute air leaks, the source of the pneumothorax. The chyle appeared to rise from many areas over the mediastinal parietal surfaces, and there was no intercommunication between the pleural spaces or localized disruption of the thoracic duct. Diagnosis of a malignant mesothelial cell growth was made on frozen sections. Although the attempt at decortication was not successful, the thoracic duct was ligated just above the diaphragm and dissected proximally for 4 in. and excised. Three large thoracostomy tubes were left in the pleural space. Microscopic examination of permanent sections revealed malignant mesothelioma of the pleura, composed of uniform cells growing in sheets and strands, separated by a dense corrective tissue stroma. The cells showed vesicular nuclei, prominent nucleoli, and pale cytoplasm. The postoperative course was characterized by continued drainage of chylous fluid and gradual deterioration. The patient died 20 days after thoracostomy. Autopsy revealed complete involvement of visceral and parietal pleura bilaterally with growth over the pericardium. The tumor extended into and below the diaphragm to involve the liver, the right adrenal, and the kidney.

A review of the literature did not reveal a similar case of spontaneous bilateral chylopneumothorax or any other case of chylous fluid associated with a pleural mesothelioma. It must be postulated that the cause of the nontraumatic chylothorax was compression, invasion, or occlusion of the thoracic duct by the tumor growth at multiple sites. The patient did not benefit from the attempted decortication of the right lung and ligation of the thoracic duct.

Primary Leiomyosarcoma and Leiomyoma of the Lung: Review of the Literature and Report of Two Cases of Leiomyosarcoma. J. W. Agnos and G. W. B. Starkey. New England J. Med. 258:12-17 (Jan. 2) 1958 [Boston].

The 2 new cases of primary pulmonary leiomyosarcoma presented concerned men, aged 52 and 57 years respectively. A review of the literature on smooth muscle tumors of the lung revealed 14 cases of leiomyoma and 18 of leiomyosarcoma. Some of the pulmonary leiomyomas were detected by routine chest films, whereas all the leiomyosarcomas had produced symptoms. The commonest presenting symptoms of the leiomyosarcomas were cough, dyspnea, chest pain, and sputum. Roentgenologic investigation was positive in all cases, showing a mass with or without atelectasis. The leiomyosarcomas were frequently visualized bronchoscopically. Biopsy was positive for tumor in half of the cases in which biopsy specimens were obtained. In most cases, the treatment consisted of surgical excision. Excellent results were obtained with the leiomyomas. The outcome with the leiomyosarcomas was better than that seen with primary carcinoma of the lung.

Carcinoma of the Parathyroid. G. L. Jordan Jr., G. W. Curd, F. Gyorkey and M. E. DeBakey. A. M. A. Arch. Surg. 76:87-92 (Jan.) 1958 [Chicago].

The authors present a report on a 42-year-old man who had most of the classic features of hyperparathyroidism. The history of chronic dyspepsia, weakness, muscle aches, chemical abnormalities, and metastatic calcification, the evidence of renal impairment, and the absence of the lamina dura were characteristic. It was possible to suspect the diagnosis of carcinoma, owing to the fact that the lesion was large enough to be palpable. that it was hard, and that there was an associated paralysis of the recurrent laryngeal nerve on the same side as that on which the lesion was palpated. An interesting feature was the development of pancreatitis in the postoperative period. Why pancreatitis should occur after surgery on the parathyroid gland is not clear, but its frequency appears to be greater than one would suspect. The patient also presented the interesting phenomenon of elevation of blood pressure in the postoperative period. Tests for pheochromocytoma did not confirm the presence of this tumor, but the possibility that the patient might have multiple neoplasms of the endocrine glands cannot be completely excluded. The condition may also have been related to his renal disease.

The prognosis for patients with carcinoma of the parathyroid is not well documented in view of the paucity of clinical experience with this disease. The commonest tumor involving the parathyroid is benign adenoma; carcinoma is quite rare. Several reports on cases of carcinoma of the parathyroid suggest that these patients may live many years, even with the presence of metastatic disease. The possible beneficial effects of a radical neck dissection in the absence of palpably enlarged nodes cannot be settled. Distant metastases seem to be as common as metastases to cervical nodes. If the primary tumor is a functioning one, it appears likely that metastatic lesions will also show function. Consequently, careful follow-up examinations are indicated, and if hyperparathyroidism recurs, an effort should be made to localize and surgically remove areas of recurrence.

Reconstruction of the Esophagus with Segments of the Colon. W. E. Neville and G. H. A. Clowes Jr. J. Thoracic Surg. 35:2-22 (Jan.) 1958 [St. Louis].

To evaluate the reconstruction of the esophagus y implanted colon, the esophagus was resected m the inferior pulmonary vein to the cardioesophageal junction in 6 normal dogs. An appropriate segment of transverse colon was interpolated in isoperistaltic fashion between the esophagus above and a separate opening in the fundus of the stomach. A colocolostomy reconstituted the colon. Pyloromyotomy or pyloroplasty provided adequate drainage of the vagotomized stomach. The dogs were killed at varying periods up to 9 months after the operation, and the postmortem findings were compared with those in 5 dogs which had been killed at varying periods up to 3 months after resection of the distal end of the esophagus and an esophagogastrostomy, bilateral vagotomy, and pyloromyotomy or pyloroplasty. In none of the 6 animals in the first group was there evidence of esophagitis, colitis, or gastritis. The animals in the second group showed diffuse inflammation in the stomach and ulceration of the esophageal mucosa. These results lend support to the concept that the stomach is not a good substitute for the esophagus. In contrast to that, the colon appears to meet the requirements for a satisfactory substitute, since it has sufficient length, since it is assured of continuing viability, and since its lining is resistant to acid peptic digestion. The colon also has an excellent blood supply.

Consequently, the technique of reconstruction of the esophagus with segments of the colon was used in 28 patients, 23 of whom had carcinoma and 5 had benign disease of the esophagus. The average operating time on all the patients was 3½ hours. There were 7 deaths in the immediate postoperative period, which occurred in patients with carcinoma above the aortic arch. Five additional patients died of a progression of their disease or of coronary occlusion after an average survival time of 8 1/5 months. Sixteen patients are living and have been followed from 3 to 36 months. All have a normal appetite with normal ingestion of food. Fifteen patients have an improved nutritional status and have gained weight. Hemoglobin levels, hematocrit, and serum protein determinations have been normal in all patients at one time in the postoperative period. The commonest nonfatal complication was diarrhea. This occurred in 8 of the 16 surviving patients and in all the experimental animals. It was associated with ingestion of food, but it usually persisted for only a few weeks. Empyema without a demonstrable anastomotic leak occurred in 2 patients who responded satisfactorily to frequent early aspiration and subsequent open drainage. Three patients complained of nocturnal regurgitation. Atelectasis was a disturbing complication in resecting high intrathoracic carcinomas. Collapse of the right lung occurred soon after the operation in 4 older patients who responded satisfactorily to bronchoscopy and tracheostomy. Narrowing of the esophagocolon anastomosis in the neck occurred in 2 patients; revision was successfully carried out in both patients. The large intestine is seemingly resistant to peptic ulceration clinically, even though reflux of barium into the colon segment can be demonstrated fluoroscopically; no evidence of colitis could be seen on routine esophagoscopy and postmortem examination up to 20 months after implantation.

Tracheobronchial Rests in the Esophagus: Their Relation to Some Benign Strictures and Certain Types of Cancer of the Esophagus. M. Bergmann and R. M. Charnas. J. Thoracic Surg. 35:97-104 (Jan.) 1958 [St. Louis].

The authors report the occurrence of a benign stricture of the esophagus in a 57-year-old woman with the chief complaint of dysphagia since childhood. A 3-cm. segment of the esophagus bearing the stricture was excised, and esophageal continuity was restored by end-to-end anastomosis. Microscopic examination of the operative specimen showed gland-like structures deep in the esophageal wall, which were lined by typical respiratory epithelium, such as is usually found in the trachea or the major bronchi. The epithelium-lined structures were surrounded by lymphoid follicles and a marked chronic inflammatory reaction. Congenital remnants were directly responsible for the occurrence of the localized esophageal stricture in this patient. A similar case of an intramural diverticulum of the esophagus lined by tracheobronchial epithelium, which had been termed an abortive tracheoesophageal fistula, was reported in the literature.

The concept that the persistence of tracheobronchial rests in the esophageal wall might give rise to tumors of the esophagus was supported by the authors' report of the case of a 65-year-old man with dysphagia and an obstructive lesion of the esophagus revealed by roentgenography and esophagoscopy. Subtotal esophagectomy was performed, and microscopic examination of the operative specimen revealed a structure whose histological features closely resembled those typical of the malignant cylindromatous tumors of the tracheobronchial tree. Such a lesion had not previously been reported. However, reports on 2 cases of typical oat-cell carcinoma (indistinguishable from oat-cell cancer of the lung) occurring in the esophagus were collected from the literature. The occurrence of these tumors is best explained by assuming an origin in tracheobronchial rests in the esophagus, such as was found in the patient with the benign obstructive lesion of the esophagus.

Jaundice Due to Tumors and Other Disorders of the Ampulla of Vater and Head of the Pancreas.

M. W. Van Weel. Nederl. tijdschr. geneesk. **101**: 2203-2208 (Nov. 23) 1957 (In Dutch) [Amsterdam].

Observations were made on 71 patients with obstructive jaundice due to tumors. The majority had carcinoma, which in 14 involved the ampulla of Vater, in 6 the choledochus, in 44 the head of the pancreas, and in 2 the duodenum. Four patients had chronic pancreatitis, and 1 had a stenosal papillitis. A total of 74 operations were performed. Seventeen pancreaticoduodenectomies were performed, and 3 of the patients who were operated on died. Three patients had transduodenal excisions, and none died. Various biliary system digestive operations were performed in 44 patients, and 5 of these died. The biliary system operations were cholecystogastrostomy, cholecystoduodenostomy, cholecystojejunostomy, and choledochoduodenostomy.

Pancreaticoduodenectomy signifies a considerable step forward in the treatment of tumors of the duodenopancratic region. Even when this operation was not radical, the life of the patient was considerably prolonged, and there was a much greater effect than was achieved with the biliary tract digestive anastomoses. The primary mortality from pancreaticoduodenectomy is by no means negligible, and careful consideration should be given to whether the patient should be exposed to this risk. The prognosis of malignant tumors of the duodenopancreatic organs is unfavorable. It may be improved by early recognition of mechanical jaundice. In patients in whom obstructive jaundice is suspected, exploratory laparotomy should be performed as early as possible.

Massive Hemorrhage from Peptic Ulcer: A Cause of Myocardial Infarction in the Aged.

W. L. Craver and F. Glenn. J. Am. Geriatrics Soc. 5:969-981 (Dec.) 1957 [Baltimore].

Massive hemorrhage is defined as that degree of blood loss which threatens life, and the following criteria are listed: (1) hematocrit reading of 30% or less (normal, 44%); (2) hemoglobin level of 10 Gm. per 100 cc. or less (normal, 14.5 Gm. per 100 cc.); (3) red blood cell count of 3.5 million per cubic millimeter or less (normal, 5 million per cubic millimeter); and (4) clinical evidence of acute blood loss from the gastrointestinal tract. In the 10-year period from Jan. 1, 1946, to Dec. 31, 1955, there were 53 patients, over 65 years of age, admitted to the New York Hospital-Cornell Medical Center with hemorrhage from a peptic ulcer. Thirty of these patients met all the foregoing criteria. Most of the patients were free from symptoms prior to the hemorrhage, thus they had no warning of impending activity and bleeding of the ulcer. In over a fourth of the patients who bled prior to admission, bleeding continued or recurred in the hospital. In the 17 patients treated medically, 3 definite myocardial infarctions and 1 possible one occurred. There were no myocardial infarctions in the 13 patients treated surgically. There should be prompt and adequate replacement of blood, to prevent shock and avoid coronary insufficiency. If bleeding continues or recurs, early operation is imperative.

Carcinoma Arising in Sebaceous Cysts.

J. W. Welch. A. M. A. Arch. Surg. 76:128-132 (Jan.) 1958 [Chicago].

Welch emphasizes that the sebaceous cyst should not be considered as a precancerous lesion, for the incidence of malignant degeneration of sebaceous cysts thus far reported in the literature and in this study is no greater than one would expect, considering the age incidence and other causative factors. Of the 239 cutaneous cysts removed and microscopically examined at the Hertzler Clinic in Halstead, Kan., during the last 3 years, 128 proved to be benign sebaceous cysts, whereas 6 were carcinomas with definite origin in sebaceous cysts. The remaining 105 were varieties of epidermoid cysts, of which 3 were malignant. The incidence of malignancy arising in sebaceous cysts in this series was 4.7%, according to the stricter criterion, or 3.7%, according to the broader interpretation of sebaceous cysts. At least 1 singular finding, that of simultaneous multiple sebaceous cyst malignancies, evolved from the study, and the case history is presented. A review of the literature revealed no histological standard differentiation between a sebaceous cyst and an epidermoid cyst. In all cases of malignancy here presented, the preoperative diagnosis was benign sebaceous cyst. In the entire investigation only a few lesions were correctly diagnosed preoperatively as epidermoid cyst, the usual diagnosis being benign sebaceous cyst.

The structure of these carcinomatous cysts does not vary greatly. The cyst cavity commonly contains a hornified material, while the cyst wall is composed of well-differentiated cells with strands of squamous cells invading the stroma. There is, as a rule, considerable tendency toward hornification, pearl formation, and intracellular spines. The basal-cell carcinoma and the basosquamous-cell carcinoma exhibit marked proliferation of basal cells, which invade the stroma or the cyst wall. For the most part, the malignancy is of low grade. The treatment for this lesion is early complete excision, to include a generous margin on all sides of the tumor. This is particularly urgent if there has been any recent trauma or change in size or character. Surgery becomes imperative if there has been any history of previous malignancy in addition to trauma or change in size or character. The occurrence of 1 or more additional primary neoplasms in a patient already afflicted with one such lesion is 6 or 7 times as likely as the 1st occurrence of a malignancy in an unafflicted patient.

A Comparison of Thoracolumbar Sympathectomy and Adrenalectomy with Adson Sympathectomy in the Treatment of Severe Arterial Hypertension: A Three-to-Seven-Year Follow-up Report. W. S. Blakemore, H. A. Zintel, W. A. Jeffers and others. Surgery 43:102-112 (Jan.) 1958 [St. Louis].

Subtotal or total adrenalectomy combined with a limited sympathectomy has been used at the Hospital of the University of Pennsylvania for more than 7 years for severe essential hypertension. This paper compares the results of treatment of 2 similar groups of patients; 1 group composed of 116 patients was treated by this operative procedure, and the other comprising 114 patients by bilateral thoracolumbar sympathectomy. All patients were followed from 3 to 7 years after operation. The criteria for selection of the patients for surgery included the following: (1) severe disease as measured by diastolic pressures of 120 mm. Hg or greater; (2) evidence of progressive vascular damage to the brain, heart, eyes, or kidney; (3) failure to respond to vigorous medical therapy; (4) age of not more than 55 years; and (5) no vascular accident to the brain or heart within the past 6 months. Initially those with advanced renal failure were accepted for operation, but it was soon learned that these patients did not respond favorably. Subsequently the authors considered as contraindications to either operative procedure phenolsulfonphthalein excretion of less than 15% in 15 minutes and a blood urea nitrogen level consistently above 20 mg. per 100 cc.

The surgical mortality was less than 1% for patients in the thoracolumbar sympathectomy series and 5% for those who had an adrenalectomy in addition to some form of sympathectomy. Seventy-three per cent of the patients who had a thoracolumbar sympathectomy survived during the follow-up period, compared with 68% of those having an adrenalectomy. The effects upon blood pressure levels, electrocardiogram, heart size, and ocular fundal changes were superior after adrenalectomy. Angina and congestive failure seemed greatly relieved especially after adrenalectomy. Headache was relieved by both operative procedures. The degree to which these patients can be rehabilitated is encouraging.

Epiphysiodesis. C. P. Van Nes. Arch. chir. neerl 9:371-383 (No. 4) 1957 (In English) [Arnhem, Netherlands].

Epiphysiodesis is the intentional early arrest of growth of an epiphysial disk in order to reduce the longitudinal growth of a skeletal part. Consequently it is used only during the period of growth The author discusses lasting and temporary arrest of growth. Lasting arrest of epiphysial growth can be effected by Phemister's method or by one of its modifications. Phemister removed an oblong portion of the cortical layer on the inside and the outside of the epiphysial disk; the adjacent epiphysial disk was then partially scooped out, after which the piece of bone was rotated 180 degrees, thus displacing the epiphysial cartilage contained in it to a higher level in the shaft. The bolting effect of the operation is questionable; undoubtedly its most important feature is the scooping out of the epiphysial disk. In order to facilitate the total removal of the disk, the Phemister technique was modified as follows: a piece of bone, pyramidal in shape and extending as deeply as possible into the spongy layer, is chiseled out at the level of the epiphysial disk. After its removal, the epiphysial disk is scooped out. The piece of bone is then rotated 90 degrees and driven firmly into its former bed. This treatment is applied to the leg on the median and lateral sides. In the case of epiphysiodesis below the knee the proximal epiphysial disk of the fibula is also scooped out.

Temporary arrest of epiphysial growth has been described by Blount, who fixed 3 strong staples vertically across the epiphysial disk, driving 1 of the legs of the staple into the metaphysis and the other into the epiphysis. The author did not use the method of Blount in the equalization of limb length, because he obtained satisfactory results by means of lasting epiphysiodesis. A total of 265 epiphysiodeses were performed in 211 patients, on the lower extremities in 205 and on the upper extremities in 6. The operation was used for correcting differences in lower limb length, resulting from paralysis, congenital anomalies, coxitis or gonitis, war injuries, and osteomyelitis, and for correction of the sequelae of trauma of the upper limbs. In 69% of the cases the difference in limb length was less than 2 cm. after completion of growth. In many cases a certain difference in limb length was intentionally retained. Untoward effects attributable to epiphysiodesis were observed in none of the patients.

NEUROLOGY & PSYCHIATRY

Chromophobe Adenoma of Hypophysis: Nosography. E. Andersson. Ugesk. læger 119:1521-1524 (Nov. 21) 1957 (In Danish) [Copenhagen].

Among 172 cases of histologically confirmed adenomas of the hypophysis from the neurosurgical department of the Rigshospital, 119 were chromophobe adenomas. Eye symptoms dominated in 110 cases; hypophysis deprivation symptoms, in 9 cases. Most cases occurred between the ages of 30 and 60 years; the youngest patient was 12 years old. The disease apparently occurs about equally frequent in the two sexes. The symptoms are either predominantly neurological, due to pressure of the tumor on the surrounding nervous tissue after it has broken out of the sella turcica, or predominantly endocrine, due to insufficiency of the hypophysis, depending on pressure atrophy because of the growth of the tumor in the sella turcica. Disturbances in vision were among the first symptoms recognized in 110 of the patients. The neurological symptoms in most cases become marked only in patients untreated for a long time or having rapidly growing tumor. Gonadotropic deficiency symptoms are the most common hormonal disturbances and seem to appear relatively early. A chromophobe adenoma should be considered in hypopituitarism. Hypogonadism with myxedema and insufficiency of the adrenal cortex testifies for disease of the hypophysis. Routine roentgenologic examination of the sella turcica and determination of the field of vision should always be carried out. Both hypophysis myxedema and primary myxedema should be borne in mind in the case of a patient with lowered metabolism. If myxedema is suspected as being due to a chromophobe adenoma, thyroidin must never be given without checking on the functioning ability of the adrenal cortex. The chief symptom in insufficiency of the adrenal cortex in hypopituitarism is fatigue. Addison's crisis occurs only if the patient is exposed to stress, grave infection, extreme muscular effort, and overdosage of medicaments, such as thyroidin or insulin. In hypopituitarism most patients can avoid great metabolic changes as long as they follow a normal diet.

Prognosis in Patients with Gliomas of Cerebral Hemispheres. I. Papo and R. Tritapepe. Minerva med. 48:4054-4060 (Dec. 1) 1957 (In Italian) [Turin, Italy].

The authors review the prognosis in 426 patients with intracranial tumors, who were operated on during the period between 1934 and 1954. Glioblastoma of the cerebral hemispheres was found in 200 patients. There were 34 operative deaths, while 13 patients (10%) survived for more than 2 years. Astrocytoma of the cerebral hemisphere was encountered in 138 patients, of whom 20 died because of the operation; 41 patients (40%) survived for more than 2 years, and 29 (29%) survived for more than 3 years. The histological distinction between glioblastoma and astrocytoma was not always clear-cut because of the cytological and structural variations observed in different sections of the same tumor, particularly when only a small fragment of tissue was first available for biopsy at operation, and later the whole tumor was reexamined at autopsy. Patients with astrocytoma survived slightly longer than those with glioblastoma; however, since the nature of both is malignant, the prognosis is fatal. Oligodendroglioma of the cerebral hemisphere was present in 44 patients. The operative mortality was 5%. Twenty-two patients (50%) survived for more than 3 years. The prognosis in patients with oligodendroglioma is also fatal, although the survival time is slightly longer than in those with glioma. The 4th group consisted of 44 patients with immature or atypical intracranial tumors. Eight patients died because of the operation, and 5 survived for more than 2 years.

Astrocytomas and oligodendrogliomas were more frequent in patients below the age of 40 years, and glioblastomas in those above the age of 50. Patients with gliomas confined to the frontal lobe had a better prognosis than those in whom gliomas were located in the parietal or the occipital lobe. The histological nature, the growth process, and the accompanying pathological features of the tumor (necrosis, hemorrhage, cerebral edema) are more important in the prognosis of the survival time of the patient than the localization or the size of the tumor. The authors do not believe that surgical intervention can eradicate the growth of glioblastoma, although treatment by decompression will give the patient temporary relief. Surgical removal of astrocytomas or oligodendrogliomas affords a chance of survival for longer periods of time than the mere surgical biopsy.

Two Classic Cases of Hepatolenticular Degeneration. O. Lingjærde. Tidsskr. norske lægefor. 77: 1039-1042 (Dec. 1) 1957 (In Norwegian) [Oslo].

The author queries whether 4 main types of hepatolenticular degeneration must be reckoned with: (1) a classic type with both hepatic and neurological and psychic symptoms; (2) a type with dominating neurological symptoms; (3) a type with dominating hepatic symptoms, the so-called abdominal Wilson type; and (4) a type dominated by psychotic symptoms. Only biochemical investigations can give the answer. In 2 of the 3 cases described, the classic symptoms were present, and the pathological findings were typical; one case was of the Westphal-Strümpell type, the other was of the Wilson type. The third case of probable hepatolenticular degeneration was that of a younger brother of the patient with the Wilson type. A sister of the first patient was characterized as mentally diseased.

The Immune Status of Poliomyelitis Patients. J. C. Wilt, W. Stackiw, J. A. Hildes and others. Canad. M. A. J. 78:32-34 (Jan. 1) 1958 [Toronto].

The study was undertaken to determine whether poor circulating antibody response is related to susceptibility to paralytic poliomyelitis. In a group of patients who had had paralytic poliomyelitis, the level of circulating antibodies was measured before, during, and after poliomyelitis vaccination, and the results were compared with those in a group of healthy controls studied concurrently. Forty-nine patients were included in the study, 28 males and 21 females, ranging in age from 6 to 67 years. Forty of the patients were still in hospital with respiratory paralysis. The diagnosis of poliomyelitis was unequivocal, and all had considerable residual paralysis. At the time of this study the patients were in good general health. Forty-three control subjects were also studied. All were adults, and most were employees of the hospital. All were in good health. None had had a clinically recognized attack of poliomyelitis, although most of them had been residents in epidemic areas.

The response varied in individuals, but the patients as a group responded as well as the controls did. The most evident difference between the 2 groups was in the incidence of antibodies in the prevaccination blood samples, which demonstrated that a higher proportion of patients than controls had circulating antibodies to a single virus type and that a higher proportion of controls than patients had antibodies to all 3 types of virus. A significantly higher proportion of controls had antibodies to type 2 virus, which suggests that type 2 virus offers some protection against infection with types 1 and 3.

Neuropsychiatric Symptoms in Liver Insufficiency. B. Harvald and M. Bjørneboe. Ugesk. læger 119: 1451-1457 (Nov. 7) 1957 (In Danish) [Copenhagen].

Of 19 patients with liver insufficiency observed during a 14 months' period in the medical department of Blegdam Hospital, 4 had alcoholic cirrhosis, 9 probably had chronic hepatitis, 4 had subacute hepatitis, and 2 had chronic hepatitis and portacaval anastomosis. Six patients died during the observation time. In most cases symptoms from the central nervous system developed after the other symptoms of progressive liver insufficiency, but in 3 cases symptoms from the central nervous system were the first signs of liver insufficiency. Three patients at times developed a Parkinsonian-like rigidity. With the development of neurological deficiency symptoms, the patient's psyche was affected. At first there was a mild confusion, then deep coma. Many of the patients became psychically clear after one or more attacks of coma, even without specific therapy. Confusion, flutter, and an abnormal electrocardiogram are a characteristic triad which marks beginning hepatic coma. In several cases the symptom of flutter led to the diagnosis of a hepatic coma. The type of dementia in hepatic coma does not differ from other forms of organic dementia, but it is peculiar in its frequently variable course. Considerable value is ascribed to treatment with diet low in protein and sterilization of the intestinal contents (Sherlock). The authors stress that hepatic coma does not inevitably lead to death but that it appears, especially in chronic liver diseases, in a recurring form which is to a certain degree responsive to therapy and prophylaxis. In patients with portacaval anastomosis one must be prepared to meet this symptom complex, and recognition and correct treatment are of great significance for the fate of the patient.

Epidemiologic and Prophylactic Considerations Concerning a Recent Epidemic of Poliomyelitis in Verona. A. Del Campo and S. De Marco. Minerva med. 48:4074-4079 (Dec. 1) 1957 (In Italian) [Turin, Italy].

Two major epidemics of poliomyelitis occurred in the city of Verona in the last 20 years. In the epidemic of 1941 there were 147 cases and in that of 1953, 229 cases. Each epidemic was preceded by a period of 2 years, in which a sharp increase in the incidence of the disease was followed by a remission of the endemic. Another epidemic, comprising 96 cases (45 in the urban area and 51 in the rural area), occurred in the province of Verona in 1957. The monthly distribution of the incidence of the disease was as follows: 8 cases in April and the first half of May, 13 in the second half of May, 33 in June, 23 in July, and 16 in August. The patients included 40 males and 47 females between the ages of 6 months and 14 years. The disease had the highest incidence among the 56 patients in the youngest group, from below 1 year to 3 years of age, with a decreasing incidence among the older groups; the latter included 22 patients in the group 3 to 6 years of age, 9 in the group 6 to 9 years, 6 in the group 9 to 12 years, and 3 older than 13 years. There was a short incubation period manifested by paralysis of the limbs in 78 patients, by paralysis of the cranial nerves in 12, by bulbar form in 3, and by meningeal form in 3. Poliomyelitis was fatal in 3 patients, all of whom had the bulbar form of the disease. The isolated virus was established to be of type 1. Spread of the infection occurred mostly by contact of a healthy person with a healthy carrier of an inapparent infection.

The first *antipoliomyelitis vaccination* (Salk vaccine) was introduced in Italy during this epidemic; administration was on a voluntary basis. The vaccine was given to 324 children, none of whom contracted the clinical disease. The authors believe that antipoliomyelitis vaccination is not contraindicated during an epidemic of poliomyelitis.

GYNECOLOGY & OBSTETRICS

The Value of the Vaginal Smear in the Treatment of Disorders of Menstruation. M. E. Egerton. J. Obst. & Gynaec. Brit. Emp. 64:827-835 (Dec.) 1957 [London].

Doubt has been expressed as to whether the results of screening for uterine cancer alone justify the expenditure of time and money involved in the routine examination of vaginal smears. It is sometimes forgotten that the test has an additional application as an index of ovarian function. Vaginal and cervical smears were taken from 1,970 patients attending the gynecologic clinics of the Royal Free Hospital, London, between the years from 1953 through 1956. In an effort to assess the value of the test as a routine measure in gynecologic practice, both smears were screened for cancer, and the vaginal smear was examined for evidence relating to ovarian function. It was found that many patients with menstrual disorders gave smears which differed markedly from the accepted norm, and that treatment with estrogen or progesterone, as indicated by the smear, did in many cases not only bring about an approximation to the accepted cytological pattern but also resulted in an amelioration of symptoms. Caution should be exercised when interpreting isolated smears, because a high cornification percentage is not necessarily an indication of high estrogen levels. This fact should not discourage a wide use of the test, which merits extended application, increasing study, and serious efforts to correlate it with biochemical and other investigations. The work described has led to the continued use of vaginal cytology in the gynecologic department of the Royal Free Hospital, London.

Some Observations on Cancer of the Breast in Mothers and Daughters. P. Bucalossi and U. Veronesi. Brit. J. Cancer. 11:337-347 (Sept.) 1957 [London].

Eighty-one patients with breast cancer, whose mothers had also been afflicted by the same disease, were regarded as belonging to "high mammary cancer strains," this being confirmed by the high incidence of breast cancer in their sisters (namely, 15 times as great as in the general population). The comparison carried out between these 81 cases and a series of 3,886 breast cancer cases observed in the Cancer Institute of Milan showed no differences as regards (1) baby feeding, (2) site in breast and histological type of tumor, or (3) marital state and parity. The length of menstrual life, supposed to be an expression of ovarian activity, proved to be slightly greater, as menopause occurred later in the 81 women of this series, both in comparison with patients in another breast cancer series and in comparison with the control series. The age of onset of the disease in 56 patients proved to be about 4 years lower than it was in the case of their mothers. In 2 patients cancer showed itself after prolonged, even if not intensive, estrogen therapy. From this study it would appear probable that the "familial" factor favorable to the rise of breast cancer resolves itself into a "genetic" factor; its possible mechanism of action (either by the production of an abnormal hormonal stimulation or by an increased sensitivity of mammary tissue to hormones) is briefly discussed.

A Case of Chorionepithelioma of the Uterus with Pulmonary Metastases Cured by Operation and X-Rays. F. J. Browne. J. Obst. & Gynaec. Brit. Emp. 64:852-856 (Dec.) 1957 [London].

A 25-year-old woman was hospitalized and came under the author's care in March, 1947. She had passed a hydatidiform mole in April, 1946, and uterine curettage had been done at that time. After that she had menstruated regularly from August to December, 1946, her last menstrual period being from Dec. 10 to 16. She had bled every day from Dec. 20 till admission. During this interval she had had repeated curettings and Aschheim-Zondek tests. The tests were consistently negative, and curettings failed to show evidence of malignancy. The curettings obtained in March, 1947, gave no evidence of recent pregnancy but rather suggested a malignant condition; the author suspected chorionepithelioma, but a pathologist decided that, in view of negative Aschheim-Zondek reactions, a diagnosis of choriocarcinoma was not justified. Later there was recurrence of bleeding, and the woman was kept under observation. A panhysterectomy was carried out in June, 1947. There was a small nodule about the size of a pea in the right broad ligament. There did not seem to be any other extrauterine extensions. The removed uterus showed a large growth on the posterior wall of the lower uterine segment.

Examination of the surgical specimen established the diagnosis of chorionepithelioma. A chest x-ray showed multiple secondary deposits in both lung fields. The bilateral pulmonary metastases disappeared after x-ray treatments. The salient features of this case are (1) the difficulty in diagnosis from curettings, (2) the rather misleading results of Aschheim-Zondek tests, (3) the disappearance of multiple metastases in both lungs after x-ray therapy, and (4) the patient remaining well for 10 years after the treatment. Approximately 20 cases have now been reported in which pulmonary metastases disappeared either spontaneously or after x-ray treatment of the lungs. The presence of pulmonary metastases should not be regarded as a contraindication to removal of the primary tumor.

A Simple Cytological Test for Cancer Cure. E. Wachtel. Brit. M. J. 1:20-22 (Jan. 4) 1958 [London].

The author reports on 165 women, between 24 and 80 years of age, who had received treatment for such malignant conditions of the genital tract as carcinoma of the vulva, Paget's disease of the vulva, squamous carcinoma of the cervix, adenocarcinoma of the endocervix, endometrial carcinoma, and carcinoma of the ovaries. The patients were followed up for periods of from 1 to 10 years at the Gynecologic Cancer Follow-up Clinic of the Hammersmith Hospital in London. Vaginal smears were obtained from these patients at each attendance at this clinic, and the cornification index, implying a count of 200 consecutive superficial and intermediate squamous cells and determination of the percentage of those with pyknotic nuclei (cornified cells), as well as the presence or absence of malignant cells, was recorded.

One hundred eleven of the 165 patients showed no evidence of any clinical, histological, or cytological recurrence and had cornification index readings of below 10. Thirty-seven patients had cornification index readings of over 10, and other evidence of remaining disease was found later. Nearly all these recurrences were cytologically predicted, that is, the high cornification index was the first evidence of remaining disease; in only 7 patients was clinical evidence of persisting malignant growth present at the time the cytological prognosis was made. Nine patients had cornification index readings of over 10 and no clinical evidence of recurrence, and they remain under observation; in 4 of these the time elapsed since completion of radical treatment has not yet exceeded 6 months. There was clinical and histological evidence of recurrence without rise in cornification index in 8 patients. A low cornification index reading during the observation period after completion of treatment should be regarded as a favorable prognostic sign only in patients in whom the pretreatment cornification index was high.

Accurate forecasts, relying solely on cornification index readings, thus were made in 94.8% of the 165 patients. Cornification index estimations in patients who received radical treatment for malignant disease in the genital tract seem to be of great diagnostic help in the recognition of failure of response or in the detection of early recurrence. The frequency with which a high cornification index reading is associated with malignant disease in the female genital tract is significant enough to suggest the use of it as a test for cure. The technique of cornification index estimation is easy and can be learned in a short time. Cornification index estimation should be included in the routine cytological follow-up investigations of cancer in view of the important implication of this test.

Possibilities and Limitations of Oral Cholecystography for the Diagnosis of Biliary Tract Diseases in Last Trimester of Pregnancy. A. Tetti and G. L. Sannazzari. Minerva ginec. 9:734-741 (Sept. 15) 1957 (In Italian) [Turin, Italy].

Diagnostic reliability of oral cholecystography for biliary tract disease was studied in a group of 30 normal prima-gravida women in the last 3 months of pregnancy. They received an oral dose of Telepaque the evening preceding the roentgenologic examination. A cholecystokinetic meal, followed by taking a film every half-hour for 2 hours, enabled the authors to observe the emptying function of the gallbladder. The films showed a gradual displacement of a deformed gallbladder shadow upward to the right. The shadow looked compressed against the lower side of the liver in some of the women; this was caused by the enlarged uterus. Several cholecystograms showed an enlarged gallbladder shadow. Satisfactory visualization of the gallbladder was obtained in all the women except 4; 3 of these were near term, and 1 was in the 8th month of pregnancy. Storage of bile in the gallbladder appeared to be normal in one-half of the women whose films showed a shadow with satisfactory intensity and definition. The films of the remaining women showed a faint shadow, which was more frequent among those near term. Motor function of the gallbladder was not consistent in all the women after the cholecystokinetic meal; it appeared to be more intense, equal, or less intense than the normal physiological function.

The authors conclude that oral cholecystography based on modern contrast mediums is of no help for a roentgenologic diagnosis of calculosis assoated with inability of bile expulsion, of cholecys-is without calculi, and of biliary dyskinesia. ral cholecystography is helpful in discarding the entgenologic diagnosis of a clinically suspected cidence of cholecystitis.

OPHTHALMOLOGY

ilateral Loss of Vision from Cerebral Infarction. . Symonds and I. Mackenzie. Brain 80:415-453 Dec.) 1957 [London].

Loss of vision in both half-fields as the result of erebral infarction is rare. Hemianopsia is not un-ommon in hemiplegia from infarction, and a sub-equent vascular lesion in the other hemisphere may cause loss of the remaining visual fields. Such cases are not considered in this paper, which is concerned with the study of bilateral visual loss from infarction of the occipital lobes. The authors review 29 cases from the literature in which loss of vision in both halves of the visual fields was associated with the postmortem observation of bilateral occipital lobe infarction. The clinical data on 20 cases from the literature in which comparable symptoms were observed without postmortem examination are summarized. Nine observations of the syndrome are presented, 4 with postmortem confirmation. The material thus derived from 58 cases is discussed. The loss of vision may be sudden or gradual. Both half-fields may be affected at the same time or in succession. The common mode of onset is a sudden loss of both half-fields. The most frequent prodromal symptoms are attacks of vertigo and transient episodes of visual impairment. Permanent blindness occurs in a quarter of the cases.

The pattern of the visual fields when there is partial sparing or recovery of vision indicates that the area most often preserved corresponds with, or lies within, a circle extending to about 10 degrees from the fixation points. In the more peripheral parts of the visual fields, the sectors adjacent to the vertical meridian are not infrequently spared when there is loss of the remainder. Selective loss of central vision is rare. Psychological disorder, including spatial disorientation, visual agnosia, denial of blindness, visual hallucinations, and other symptoms, is an inconstant, but sometimes conspicuous, feature of the syndrome. The anatomic basis of the visual field defects is discussed, and the arterial blood supply to the visual cortex and optic radiations is considered in relation to the clinical and pathological data. The pathogenesis of the syndrome is discussed with special reference to the occurrence of simultaneous loss of vision in both halves of the visual fields and the postmortem finding, in some patients, of thrombosis in the basilar or vertebral arteries. The conclusion is drawn that the most frequent cause of bilateral occipital lobe infarction is embolism of the calcarine arteries. The emboli may result from valvular disease of the heart, auricular fibrillation, or coronary thrombosis but are more often derived from thrombi formed within the basilar or vertebral arteries as the result of atherosclerosis.

THERAPEUTICS

Phenolic Compounds in Chemotherapy of Rheumatic Fever. N. E. Clarke, C. N. Clarke and R. E. Mosher. Am. J. M. Sc. 235:7-22 (Jan.) 1958 [Philadelphia].

Compounds related to the monophenol salicylic acid, i. e., the diphenols gentisic acid, protocatechuic acid, 2,3-dihydroxy benzoic (pyrocatechuic) acid, beta resorcylic acid, and gamma resorcylic acid, and the triphenols phloroglucinol carboxylic acid and 2,3,6-trihydroxy benzoic acid, were tested in patients with rheumatic fever and rheumatoid arthritis. Increased antirheumatic potency was observed in phenolic compounds with double chelate rings, and superior antirheumatic qualities were associated with a second or third hydroxyl group in the 3 position on the benzene ring. The compounds that had double chelate rings or a single chelate ring and hydroxyl group in the 3 position did not generate usual urinary changes associated with detoxication. The phenolic compounds produced some changes associated with antirheumatic adrenal hormones but differed by producing relative increases in circulating lymphocyte cells and decreasing the urinary excretion of 17-ketosteroids.

The high antirheumatic potency of double chelating phenols supports the importance of antirheumatic metabolites in salicylic acid therapy. The compound 2,3,6-trihydroxy benzoic acid had lower toxicity and acted more promptly to suppress manifestations of rheumatic fever and lower elevated blood sedimentation rates than did all other phenolic compounds. Like other double chelating phenols in this series, it usually decreased urinary excretion of sulfur and glucuronic acid conjugates except in patients who had malignant or submalignant rheumatic fever. These metabolic findings suggest a normalizing or saving action on special connective tissue components. The compound 2,3,6-trihydroxy benzoic acid also produced significant and consistent reduction in the urinary excretion of 17-ketosteroids, which lends support to its having a saving action in rheumatic fever. These observations permit the belief that triphenols and especially 2,3,6-trihydroxy benzoic acid, when administered early in a first attack of rheumatic fever, bring unusually rapid recovery without residual signs of heart damage.

BOOK REVIEWS

The Pharmacologic Principles of Medical Practice: A Textbook on Pharmacology and Therapeutics for Medical Students, Physicians, and the Members of the Professions Allied to Medicine. By John C. Krantz, Jr., Professor of Pharmacology, School of Medicine, University of Maryland, Baltimore, and C. Jelleff Carr, Senior Research Pharmacologist, Psychopharmacology Service Center, National Institute of Mental Health, Bethesda, Md. Fourth edition. Cloth. $14. Pp. 1313, with illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1958.

This new edition has been enlarged by 150 pages. Although much has been rewritten, the organization remains the same. The first portion of the book discusses, in some detail, the historical background and general principles of drug action. The numerous examples used for the latter may be considered repetitious and unnecessarily elementary by some physicians and medical students, although for students in pharmacology and other fields this portion may be very helpful. The remainder of the volume is divided into eight major therapeutic categories. A new chapter on the local use of drugs in the ear, eye, nose, and throat includes a variety of agents useful in these specialized fields. The chapter on the use of drugs in the treatment of mental illness reflects the recent advances in this area. Antihistaminic drugs are no longer considered with autonomic agents but are included in a new chapter on allergic diseases. The outstanding feature of the book appears to be its comprehensive inclusion of almost all of the drug preparations used in medicine today. They are identified by both generic and proprietary names, and for all official and many nonofficial agents the available preparations are described. The index has been enlarged and is more useful than in previous editions. Despite frequent reference in the text to original papers by author and year, bibliographic references at the end of each chapter are limited and refer only to general or review articles. The organization of the material results in many drugs being mentioned in several spots throughout the book without any adequate discussion of the agent. This book would probably be of most value to persons in fields related to medicine, where a comprehensive but rather superficial consideration of pharmacology would be helpful.

Medicolegal Forms with Legal Analysis. Paper. pp. 111. Law Department, American Medical Association, 535 N. Dearborn St., Chicago 10, 1957.

A review of professional liability claims shows that a significant number might never have been initiated if the physician had obtained an adequate written consent. This fact, plus the lack of up-to-date medicolegal forms, apparently motivated the Law Department of the American Medical Association to prepare this booklet. The material is discussed under the following headings: (1) Consent to Operations and Other Procedures; (2) Patient's Right to Privacy; (3) Confidential Communications and Records; (4) Artificial Insemination; (5) The Physician-Patient Relationship; and (6) Autopsy. Each section includes case citations and numerous authorization and consent forms which physicians or their attorneys may modify to suit their needs or to meet the requirements of local laws. Although the Law Department states that the booklet is not exhaustive, it is probably the most comprehensive publication on medicolegal forms available. Every practicing physician and attorney in the medicolegal field would be well advised to obtain a copy. He may do this by writing to the Law Department. Single copies are available to members of the American Medical Association without charge. Others may obtain copies for $1.00 each.

Measurement in Physical Education. By Donald K. Mathews, D.P.Ed., Associate Professor and Director of Research in Physical Education, State College of Washington, Pullman. Cloth. $5.25. Pp. 359, with 81 illustrations by Todd Wallis. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W. C. 2, England, 1958.

The growing interest in fitness and its evaluation makes this a timely volume. The author has geared the book to the level of prospective teachers of physical education. At the same time, he has included sufficient statistical method to permit students to become capable of scientific testing and application of results. After a discussion of approaches and methods of measurement, there is good coverage of strength tests, motor fitness and motor ability tests, sports skill tests, and body mechanics evaluation. Cardiovascular testing and nutritional appraisal are considered in terms of the physical educator's responsibilities in these areas. Evaluation of social efficiency and testing of knowledge in health and physical education are less extensively treated. There is a summary relating to the organization and administration of the testing program.

This volume should gain wide acceptance for use at the undergraduate level. Its understandable language and nontechnical approach will be appreciated by students. Moreover, its coverage is adequate in terms of the future responsibilities of the average student in the testing area. Appropriate emphasis is given to application of the tests to the

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These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

structional program in physical education. It ould have been advisable, however, to confine overage to physical education and directly related esting. Evaluation in health education deserves broader and more comprehensive treatment than ; here offered. If physical educators are to have esponsibilities in the school health program, they hould be thoroughly prepared for these duties. he author's recognition of the limitations of available testing devices is refreshing. He makes a good oint in asserting that, while it would be foolardy not to admit the shortcomings of present rocedures, it would be even more foolish not to est merely because today's tests are not perfect. Testing is a means toward a better physical education program, not a program or an end in itself.

Biochemistry. By Abraham Cantarow, M.D., Professor of Biochemistry, Jefferson Medical College, Philadelphia, and Bernard Schepartz, Ph.D., Assistant Professor of Biochemistry, Jefferson Medical College. Second edition. Cloth. $12. Pp. 867, with 150 illustrations. W. B Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W. C. 2, England, 1957.

This volume is written for first year medical students. The authors felt that there was a need for a biochemistry textbook that would stimulate interest in this difficult field. The medical student frequently feels the lack of adequate preparation in the fundamentals of organic and physical chemistry, and the authors, in an endeavor to hold his interest, have used theory only when necessary and have stressed biochemical processes as they relate to metabolism or to normal and disturbed function. Biochemistry is a rapidly changing field, and difficulties are frequently encountered in integrating the many areas of specialized research into the whole of biochemistry without stressing or overemphasizing any one of them. The authors have tried to give fairly complete presentation of each subject without being sidetracked by details. They make use of cross references to the details of topics that frequently reappear throughout the text.

The first five chapters give a relatively brief description of the chemistry of carbohydrates, lipids, proteins, nucleic acids, and porphyrin compounds. This is followed by discussions of the vitamins and enzymes; the mechanisms of digestion, detoxification, respiration, water balance, and acid-base balance; methods used for metabolic investigation, energy metabolism, high-energy phosphate bonds, biological oxidation; and carbohydrate, lipid, protein, nucleic acid, porphyrin, and inorganic metabolism. The last chapters deal with hormones, tissue composition, milk, blood and other body fluids, and various aspects of renal function. Each chapter contains a bibliography, which consists of a list of monographs or books of general interest rather than papers on isolated experimental work of limited interest. The table of contents and the index are complete.

Chemical Methods in Clinical Medicine: Their Application and Interpretation with Techniques of Simple Tests. By G. A. Harrison, B.A., M.D., B.Ch. Fourth edition. Cloth. $11. Pp. 667, with 164 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W. C. 1, England, 1957.

This textbook is primarily a record of the author's personal experiments and opinions, and, for this reason, references to the literature have been restricted to special points or particular techniques. The first chapter deals with special apparatus, such as the colorimeter, the flame photometer, paper electrophoresis, and the spectroscope. Succeeding chapters deal with routine urine examinations, as well as normal and abnormal urinary constituents and renal function tests. Blood sugar levels, glucose tolerance curves, liver and pancreatic function tests, blood, spinal fluid, milk, and gastric analyses, and the chemical examinations of duodenal contents and feces are described. A discussion on basal metabolism and a chapter on the laboratory diagnosis of abnormal skin pigmentation is presented. The last chapter deals briefly with special tests and problems, including tests for seminal stains, blood stains, and tests for amyloid, splenic anemia, and lipoid histiocytosis. The methods for preparation of reagents and their standardization, conversion factors, logarithm and antilogarithm tables and other miscellaneous matters are collected in the appendix. The book is written in an easily readable, relatively informal manner. The illustrations are well chosen. This book is a collection of observations and favorite methods of the author and is not intended to be a complete manual. For this reason, it should be of greatest value as a reference guide for the clinician rather than for those engaged in the various special phases of laboratory medicine. Within these limitations, the author's intent has been well fulfilled.

Advances in Tuberculosis Research [Volume VIII:] BCG: A Discussion of Its Use and Application. Edited by Dr. Hans Birkhauser and Dr. Hubert Bloch. Cloth. $11. Pp. 316, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; S. Karger AG., Arnold Bocklinstrasse 25, Basel, Switzerland, 1957.

This volume, the eighth in the series, emphasizes the controversial questions concerning BCG vaccine. It presents studies in progress and discusses problems of theoretical and practical importance. The editors express their hope that these contributions will be helpful in stimulating discussion and orienting further studies. It is now more than 25 years since BCG vaccine was first introduced. The vaccine has been given to probably well over 100 million persons all over the world. There is still no standard preparation of the vaccine nor has a vaccination technique been generally standardized. There is no agreement as to the usefulness and efficacy of BCG vaccinations. There are wide differences of opinion with regard to vaccination methods, and preparation of the vaccine varies widely from one laboratory and one country to another. Even where the vaccination is compulsory by law, variations exist in kind of vaccine, method used, and indications and contraindications governing its administration. Scientific evaluation of the effects has just begun in most countries. Workers again are becoming interested in the mechanism of its action. Experimental findings are often controversial. National and international cooperative projects are being carried out.

The editors did not attempt to present a summary of results of completed studies but rather to present publications that would expose current problems, to describe new techniques differing from those accepted, and to include examples of performing the vaccination in the field under various and often adverse conditions. This valuable volume not only should help resolve the many questions concerning BCG vaccination for the student but also should stimulate the ultimate solution of the problems involved.

Artificial Insemination in the Human. By A. M. C. M. Schellen, M.D. With introduction by Sophia J. Kleegman, M.D., Associate Professor of Gynecology, College of Medicine, New York University, New York. Translation by Miss M. E. Hollander. Cloth. $14. Pp. 420, with 10 illustrations. Elsevier Press, Inc., Bank of Southwest Building, Houston 2; 110-112 Spuistraat, Amsterdam C, Netherlands; Cleaver-Hume Press, Ltd., 31 Wright's Lane, Kensington, London, W. 8, England, 1957.

This book was written by a European physician who accumulated much of his information while on a lengthy visit to the United States. The author has assembled a tremendous amount of data pertaining to artificial insemination and other phases of the management of infertility. The literature apparently has been thoroughly combed for references, and virtually every phase of the subject has been covered, including history, legal ramifications, methods, choice of donor, methods of analysis of results, and moral, sociological, and religious aspects of the subject. As a reference to published reports, the book is excellent. The excerpts are generally pertinent and well abstracted. On the other hand, in some instances, possibly through lack of complete familiarity with the language, the author has mistaken the content or purpose of some of the material he has abstracted. The book is essentially an analysis of the work of others. For this reason, it would seem somewhat injudicious for the author to reach conclusions, as he has attempted to do. It would have been better to leave the value or lack of value of the procedures to the judgment of the reader. Some of the statements regarding medical fees in America appear to be inaccurate. In general, however, the author has treated a controversial subject with tact and good taste and has performed a worthy service. It is only when he editorializes that one may take issue with some of his conclusions. The book should be read by anyone interested in artificial insemination.

Understanding Your Patient. Edited by Samuel Liebman, M.D., Clinical Assistant Professor of Psychiatry, University of Illinois College of Medicine, Chicago. Contributors: C. Knight Aldrich, M.D., and others. Cloth. $5. Pp. 170. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5, 4865 Western Ave., Montreal 6, Canada; Pitman Medical Publishing Company, Ltd., 45 New Oxford St., London, W. C. 1, England, 1957.

This is a series of lectures given before the staff of the North Shore Hospital in Winnetka, Ill, where the author is the medical director. One of three such monographs, it is written in understandable terms by physicians who specialize in the subjects presented. An attempt is made to present the material from a practical viewpoint, and, therefore, this should enable the physician to meet and understand the psychiatric and psychosomatic problems of his patients from day to day and to treat them intelligently. He may not be able on his own to solve all of these situations, but this book should at least enable him to recognize such problems and know when and where to call for help. The leading article, written by Dr. Blain, sets the stage well and implies that each practicing physician has a responsibility in this field. The series begins with the child and carries on to adult life, even to the point of advising how to handle grandparents. The articles on premarital and marital counseling are excellent. This book should make the thoughtful physician more aware of psychosomatic problems in his patients.

The UFAW Handbook on the Care and Management of Laboratory Animals. Edited by Alastair N. Worden and W. Lane-Petter. Second edition. Cloth. $9.80. Pp. 951. Published by Universities Federation for Animal Welfare, London, England; distributed by Animal Care Panel, Office of Editor, 951 E. 58th St., Chicago 37, 1957.

This second edition is a distinct contribution to the rapidly expanding area of our knowledge concerning laboratory animals. With 88 contributors and with a discussion of the care and handling of more than 50 animals that are used in the laboratory, the book is a mine of information. The numerous illustrations contribute to its value. The first 16 chapters discuss the general considerations pertinent to the efficient management of laboratory animals, including housing, breeding, record keeping, and the use of anesthesia. Chapters 17 through 75 contain detailed information about each of more than 50 species of laboratory animals. Some of the sections on disease are modest, and some of the chapters could have been proofread more carefully. The references in each chapter are themselves items of great value, and the work as a whole is probably the outstanding volume in print on the care of laboratory animals.

QUESTIONS AND ANSWERS

ESTING THYROID FUNCTION

'O THE EDITOR:—*Of the three determinations for thyroid function, namely, basal metabolism, protein-bound iodine, and radioiodine uptake, which is, at the present time, considered to be the most accurate? How do these tests compare with each other?*

W. J. Hinzelman, M.D., Greeley, Colo.

ANSWER.—The accuracy of any test of thyroid unction is dependent largely on the attention to letail and the enthusiasm of the laboratory personnel in its performance. Failure to observe perect technique in all details is undoubtedly one eason why the basal metabolism test has produced o many unsatisfactory results. It has been estinated that the basal metabolic rate indicates thyroid function correctly in only about 50% of cases, but with extra care this figure could be improved to 75 or 80%.

At the present time, the determination of protein-bound iodine is the most accurate method of assessing thyroid function. The test is difficult to perform and is subject to contamination from iodine in the air, water, and glassware. Its chief weaknesses are (1) the overlap of values in different states of thyroid function, and (2) the deceptive results produced by previous ingestion of iodine, thyroid, antithyroid drugs, mercurial diuretics, and triiodothyronine, by other disease states, such as acute hepatitis, acute thyroiditis, and nephrosis, and by pregnancy. The normal range for this test is 3-8 mcg. per 100 cc.

The determination of the 24-hour thyroidal uptake of I^{131} is the most commonly used test employing radioiodine. This method is subject to the same weaknesses as the determination of protein-bound iodine. In addition, because of the wide scatter in 24-hour I^{131} uptake, the test is unreliable in the diagnosis of hyperthyroidism caused by adenomatous goiter. Accuracy of the test may be improved by determining the 24-hour I^{131} uptake before and after the administration of triiodothyronine and thyrotropin. The normal range for the 24-hour uptake of radioiodine is 10-40%. Uptakes of over 55% usually indicate hyperthyroidism, and uptakes of between 40 and 55% represent the twilight zone—either euthyroidism or hyperthyroidism. This test has about the same degree of accuracy as the carefully performed basal metabolism determination.

The best comparison of the accuracy of the three tests in the diagnosis of thyroid dysfunction is that of Blackburn and Power (Tr. Am. Goiter A., p. 249, 1955). Their experience indicates that the protein-bound iodine test is more accurate than that of either the basal metabolic rate or the I^{131} uptake in the diagnosis of toxic diffuse goiter, adenomatous goiter with hyperthyroidism, and myxedema. The basal metabolic rate was more accurate than the 24-hour radioiodine uptake.

The diagnosis of thyroid dysfunction is made primarily on the clinical appraisal of the patient's history and physical findings. Laboratory tests by no means supplant clinical judgment but merely tend to support it.

FOURTH INOCULATION OF POLIOMYELITIS VACCINE

TO THE EDITOR:—*What has been the official recommendation regarding booster doses of poliomyelitis vaccine after an individual has completed the initial course of three injections? Is it now recommended that these be given after the third injection? If so, at what interval should they be given?*

W. C. Nowlin, M.D., Littlefield, Texas.

ANSWER.—At the time of writing, no "official" recommendations have been formulated by any national medical group concerning a fourth inoculation of poliomyelitis vaccine, but several investigators and some state health departments have recommended that such a dose be given as a routine. This problem requires careful consideration both from the public health standpoint and from the standpoint of the patient. Salk has reported the persistence of neutralizing antibodies for periods up to four and one-half years in persons immunized with three inoculations of research-laboratory-produced vaccine. Data presently available are inadequate to determine precisely the duration of artificial immunity induced by commercial vaccine. Although commercial poliomyelitis vaccines do not all reach the level of antigenic potency of research-laboratory-produced vaccine, the basic series of three inoculations with commercial vaccine has been shown to produce satisfactory antibody response. All available evidence points to a continuing vaccine effectiveness against paralytic poliomyelitis of about 75% among all vaccinated

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persons and of about 90% among those who have received three doses. Since there are still many persons who have not yet been vaccinated or who have received only one or two inoculations, the primary goal of public health programs must be the immunization of all persons under 40 years of age with the basic series of three inoculations. For this reason, many health departments have made no recommendation concerning a fourth dose but rather have emphasized the basic task of achieving primary immunization of all susceptible age groups with three doses.

From the standpoint of the patient, however, it may be entirely appropriate for the practicing physician to recommend a fourth dose. Many investigators are concerned that the series of three inoculations is not 100% effective. A few persons do not produce measurable antibody levels against one of the poliovirus types despite three inoculations of commercial vaccine. Furthermore, a small number of confirmed paralytic poliomyelitis cases have been documented in persons vaccinated three times. For these reasons, and since reactions to the vaccine have been remarkably few, the practicing physician may wish to recommend that his patients receive a fourth inoculation. It would be reasonable for a fourth dose to be given one or two years after the third dose or prior to periods of increased risk, such as before the next poliomyelitis season, prior to travel abroad, or when cases of poliomyelitis are occurring in the community.

Editor's Note.—After the above reply was received and prepared for publication, a committee of advisors on poliomyelitis vaccination to the Surgeon General of the United States Public Health Service met in Washington, D. C. They emphasized the importance of the basic three-dose series for poliomyelitis immunization but agreed that the decision to administer the fourth poliomyelitis immunization inoculation must be made by individual physicians.

MODIFICATION OF MASTER'S TWO-STEP EXERCISE TEST

To the Editor:—*Concerning Master's two-step and "double-step" tests, is there any reason why exercise, such as toe touching on the electrocardiogram table until tired at a rate of perhaps one every 4 seconds, should not give just as satisfactory results?*

L. B. Lowe, M.D., Roanoke, Va.

Answer.—Dr. Master, the originator of the "two-step" exercise test, feels that this procedure should be standardized. His first argument is that if too little exercise is performed, even in the presence of coronary disease, there may be no changes on the electrocardiogram and that if too much effort is essayed it might be dangerous to the patient. Moreover, again and again it has been demonstrated that the single (1½-minute) two-step test may result in negative findings while a double (3-minute) two-step test results in positive findings. This is another reason for standardization of the test. The need for standardization is further proved by having a patient who should perform, for example, 36 trips for his age, sex, and weight climb only 30 times. The tracings are negative, but, if repeated for 36 ascents (the number obtained from the standard table), the electrocardiogram becomes positive. This will hold true on repetition of 30 trips and then 36. If unstandardized tests are to be essayed, a study first should be done on a control group of normal persons before the test is applied to patients suspected of suffering from coronary disease or some other condition involving the coronary circulation.

TUBERCULIN TESTING

To the Editor:—*What is the significance of a 4+ reaction and central necrosis with a Mantoux 1:10,000 interdermal tuberculin test in a middle-aged man with (1) an apparently normal chest, and (2) arrested or fibrotic minimal chest lesion? 3. Does a strongly positive Mantoux reaction point to extrathoracic tuberculosis if chest findings are negative? 4. Since streptomycin and isoniazid are often given for treatment of other than tuberculosis, does the tubercle bacilli become less virulent or not recoverable and also more resistant to those main drugs? 5. Does active antituberculosis treatment produce reversal or diminution of the interdermal test reaction?*

M.D., New York.

Answer.—The 4+ reaction indicates a high degree of sensitivity of tissue to tuberculoprotein, caused by tuberculous lesions containing living tubercle bacilli. They may be located both in the chest and in extrathoracic organs, depending on where the tubercle bacilli were focalized when they initially invaded the body.

1. It is assumed that the expression "apparently normal chest" refers to clear x-ray film and no abnormal physical sign. There may be many lesions in the lungs of this person which are not revealed by x-ray film or conventional physical examination. Lesions must be macroscopic before they obstruct x-rays so as to cast visible shadows on film. Moreover, they must have proper consistency to obstruct x-rays. Without this consistency, sizable lesions may be radiotransparent and therefore cast no shadow. Furthermore, such lesions must be in the 75% of the lungs visualized on the usual posteroanterior x-ray film of the chest. If they are located in the 25% of the lung hidden from view by the shadows of the heart and diaphragm, their presence is not revealed by shadow on the film. All chronic pulmonary tuberculous lesions are microscopic in the beginning, and, therefore, their presence and loca-

ions are not determined by x-ray film. In many persons such lesions never attain size and consistency or have the location to be detected by x-ray film. This is why the tuberculin test is far superior to the x-ray film of the chest in screening from any group of persons those who have tuberculosis in some stage of its development. It is only persons who react to tuberculin and, therefore, have at least microscopic lesions in whom clinical tuberculosis develops. Such development may occur within months after microscopic lesions are laid down from the first invasion with tubercle bacilli or at any subsequent time in life, including old age. Unfortunately, there is no way to determine whether this person with a 4+ reaction will or will not have such lesions evolve as months and years pass, except to examine him periodically. If this is the first time this person has been tested with tuberculin, there is no way to determine how long ago his tissues were invaded with tubercle bacilli. This could have been in infancy or at any subsequent time up to a few weeks before the test was administered. That all tuberculin reactors have at least small lesions was determined in cattle during the last decades of the 19th century. The findings of veterinarians and pathologists of that time have ever since been confirmed. Between 1917 and 1957 in the United States alone more than 4 million cattle were slaughtered and postmortem examinations made because they reacted to tuberculin. This has left no question in the minds of students of tuberculosis that lesions are practically always present in tuberculin reactors. Ghon did careful and complete postmortem examinations of the bodies of children who, during life, had no evidence of tuberculosis except the tuberculin reaction. However, he found lesions often scarcely the size of the head of a small pin in all but one (not completely examined) of the 184 bodies.

2. It is assumed that the phrase "arrested or fibrotic minimal chest lesion" has been proved to be tuberculous. There are numerous other etiologies of fibrotic shadow-casting pulmonary lesions, none of which can be determined by the shadow on the x-ray film. If the given lesion has been proved to be tuberculous, one would expect to elicit a tuberculin reaction. Probably the degree of reaction depends on the amount of tuberculoprotein being eliminated from lesions in the body. In all probability there are numerous lesions other than the one under consideration in this person's body which, even if not active and progressive, may be releasing tuberculoprotein in sufficient amount to maintain a high degree of sensitivity. In some persons with long-standing lesions, the amount of tuberculoprotein liberated diminishes and sensitivity of tissues decreases so that only slight reaction results from the tuberculin test. In fact, in some cases sensitivity reaches such low levels that it is not elicited by the usual test doses of tuberculin. Evidence is accruing which strongly suggests that in more persons than was formerly believed all tubercle bacilli disappear and sensitivity is completely lost.

3. The tuberculin reaction does not indicate location of lesions. It is probably rare that a tuberculin reactor does not have at least microscopic lesions both in lungs and in extrathoracic organs. The degree of reaction apparently is not determined by location of lesions.

4. When the major antituberculosis drugs come in contact with tubercle bacilli they have a suppressive effect, particularly on those that are multiplying. Therefore, the numbers of such organisms may decrease and be less likely to be recovered in sputum and other material. Tubercle bacilli in contact with drugs may become resistant to them. When two drugs are administered simultaneously, emergence of resistance may be postponed considerably.

5. The characteristic of tuberculous lesions, namely, loss of blood supply, obviously prevents drugs from reaching the organisms in necrotic material. Therefore, only organisms in vascular lesions are affected. If bacilli in such vascular lesions are suppressed and stop multiplying, less tuberculoprotein is produced and one might expect decrease in sensitivity of tissue. The best observations in this respect have been made on persons who have recently been invaded with tubercle bacilli and have been converted to tuberculin reactors. At the time the reaction can first be elicited, the lesions in various parts of the body are usually small and vascular. Antituberculosis drugs administered at that time may be expected to reach all organisms. In a few cases in which drugs have been administered to recent tuberculin converters, there has been reversion of sensitivity, at least to the usual test doses of tuberculin. As yet, there is no incontrovertible evidence that such loss of sensitivity indicates that all tubercule bacilli have been destroyed. There is the probability that they have been suppressed, however, to such low levels that they are not multiplying and liberating tuberculoprotein. Continued observations may reveal that when the drugs are discontinued sensitivity will return as bacilli regain their activity.

EFFECTS OF COOKING ON FOOD

To the Editor:—*In the field of nutrition, aside from psychological or sensory reactions including geographical and customary dietary habits, what arguments are there, if any, in favor of the cooking of food, aside from possibly the destruction of pathogenic organisms, provided that the natural food is properly reduced in size before mastication?*

C. D. Generales, New York.

Answer.—The destruction of pathogenic organisms seems to this consultant to be an extremely important reason for cooking food, particularly if the source of the food leads one to be skeptical of its cleanliness. Cooking also increases the palatability of many foods and, in the tuberous vegetables, helps to break down the fibrous tissue. Heat increases the digestibility of certain nutrients. Heat will also destroy certain antimetabolites, such as avidin in raw egg white. It would seem to be undesirable to dismiss lightly the psychological and sensory reactions toward food, and, since cooking favorably influences these, there certainly is no contraindication to this method of food preparation. If one should happen to prefer raw foods and is sure of their cleanliness, there likewise would be objection to cooking them, but a middle course is usually best.

EXCESSIVE POTASSIUM INFUSION

To the Editor:—*In an 8-year-old child who shows dehydration and has normal kidneys, is there danger of potassium poisoning with the following therapy? Administration of 1,000 cc. intravenously of fluid containing 10% dextrose solution and the following electrolytes: 80 mEq. of sodium, 36 mEq. of potassium, 4.6 mEq. of calcium, 63 mEq. of chlorine, 60 mEq. of lactate, and 2.8 mEq. of magnesium, with a rate of flow of 500 cc. per hour.* *M.D., Kentucky.*

Answer.—The infusion of potassium into a child at a rate of 18 mEq. per hour involves a definite hazard of potassium poisoning. Grollman (Pharmacology and Therapeutics, ed. 3, Philadelphia, Lea & Febiger, 1958, p. 851) recommends that this salt be given at a rate not exceeding 20 mEq. per hour to an adult, with constant supervision for evidence of cardiac arrhythmia or hyperpotassemia. The rate indicated by the questioner would accordingly be excessive for an 8-year-old child.

ATROPHY OF SUBCUTANEOUS FAT AT SITE OF INSULIN INJECTION

To the Editor:—*Is there any way to avoid the depressed areas at the site of protamine zinc insulin injections due to the digestion of the adipose tissue layer from the insulin? In two patients, the thighs are markedly irregular in outline, which is quite disfiguring.*

M. F. Bossart, M.D., Akron, Ohio.

Answer.—Atrophy of subcutaneous fat at the site of insulin injections occurs frequently in children, not uncommonly in women, and occasionally in adult males. The disappearance of fat is apparently a local metabolic effect of insulin. No important structure is damaged, and the end result has no serious significance aside from the cosmetic aspect. Individuals who are susceptible to atrophy usually develop such with any type of insulin and in any part of the body in which insulin is used. Various suggestions have been made in an attempt to avoid atrophy due to insulin injection in susceptible persons. These include injection of insulin intramuscularly and the use of insulin which has been kept at room temperature rather than in a refrigerator. In regard to the former, patients may not like to use a longer needle and the deeper injection. In regard to the latter, there is considerable difference of opinion as to whether this measure is effective. In the light of present knowledge, the best course would appear to be as follows: 1. For sites of injection, use areas over the abdomen, flanks, and upper buttocks; thus, any atrophies which occur will not be exposed to public view. 2. Use insulin kept at room temperature, for what value that may have. 3. Inject the insulin well beneath the skin, using a ½-in. needle. 4. Shift the site of injection from one time to the next so that a given area 3-4 cm. in diameter does not receive insulin oftener than once in three or four weeks. Fortunately, if insulin injections are completely stopped in an area where atrophies have occurred, in a considerable number of patients slow restitution of subcutaneous fat takes place, although this may require two or three years.

TREATMENT OF OLIGOSPERMIA

To the Editor:—*Please comment and make recommendations on management and prognosis in the following case. A young couple in their late twenties have been married eight years and have not been able to bring about conception. The wife appears to be normal gynecologically in all respects (menses, pelvic examination, Rubin test, endometrial biopsies, and cervical smears). Her husband, however, has a decreased number of sperm. Three semen analyses, done at intervals of three to four months, revealed sperm counts of approximately 20 million per cubic centimeter, of which 75% were nonmotile. Prostatic massage revealed no abnormalities. This man has a negative history in regard to descent of the testes, chronic diseases, exposure to radium, or ingestion of chemicals. Also, laboratory tests revealed normal blood cell count, sedimentation rate, protein-bound iodine level, and basal metabolism rate. He has been taking 1 grain (60 mg.) of thyroid daily for the past three to six months with no noticeable benefit, and, similarly, no benefit was observed with large doses of vitamin B by mouth. No fern effect in his semen has been determined.* *M.D., New York.*

Answer.—The inquirer has performed practically all of the tests that any qualified specialist would recommend, and he should be commended for the conservative manner of treatment. If the patient has normal thyroid function, very little can be done to improve the spermatozoal motility and viability. Small doses of testosterone, 10 mg. daily by mouth, may be tried for a month. Two reports have appeared claiming improvement after the administration of sodium liothyronine (Cytomel) in men with necrozoospermia who did not improve with thyroid treatment, but these results have not been substantiated by others. There is still a possibility that pregnancy will ultimately occur even though the husband's fertility is not improved. If a prognosis concerning the husband's status is desired without further delay, a testicular biopsy may yield a clue regarding the character of the lesion involving the seminiferous tubules and its reversibility.

Answer.—The therapy of oligospermia, especially when 75% of cells are nonmotile, cannot be attempted until good morphologic examination has been made. Should morphology studies show that the majority of spermatozoa are abnormal, it would be wise to consider such a male sterile for all practical purposes, but with normal morphology, and especially when the motile cells show a good grade of motility, therapy might be of some benefit—perhaps testosterone rebound therapy. In the wife, accurate timing of ovulation could be attempted with the hope that the few cells which may be normal will be present at the correct time. With oligospermia, homologous insemination is usually of no help. After an eight-year period of infertility, if there is no religious prohibition, donor insemination should be strongly considered.

ACNE AND UNCONTROLLABLE DESIRE FOR SWEETS

To the Editor:—*What does one do for a 15-year-old boy who has acne vulgaris of face and back and an insatiable and uncontrollable desire to eat sweets? The parents are intelligent, and the son has a good IQ, but no pleading or argument can keep the boy from eating candy before meals, after meals, and at any and all hours. The parents have sought aid from psychologists and internists without success. Is there any known substance which can control the appetite for sweets? Amphetamine combinations have been used in control of appetite for foods in general.*

Horace A. Hall, M.D., Corona del Mar, Calif.

Answer.—Insofar as control of the acne is concerned, the eating of candy is not an impossible situation. If the boy will avoid chocolate, his desire for sweets should not interfere with the cure of his cutaneous condition. Whether x-ray therapy, estrogen administration, or antibiotic therapy is the treatment of choice or what local therapy should be prescribed depends on many factors, such as the severity of the eruption, the tendency toward scarring, the amount of pustulation present, and how much the patient and his parents are concerned about this cosmetic defect. Perhaps of greater importance is the habit pattern being developed by the boy. It is too late now to correct a serious character defect by simple parental discipline. If he cannot develop self-control by himself, the aid of a psychiatrist should be sought. Suppose the boy should develop an overpowering desire for alcohol or any other of the so-called social vices?

RAPID PROSTATIC GROWTH

To the Editor:—*In practice, one occasionally encounters male patients, usually 50-60 years old, in whom the prostate seems to grow rapidly. One man in particular, aged 55, has had two prostatic resections. Such patients apparently have less hypertrophy of the nipples than is average for men of corresponding age? Please comment on the [illegible] female hormones to prevent recurrence of benign hypertrophy of the prostate. Please supply references for correlation of breast changes in older males with hormone changes. What is the effect on sexual activity of temporary use of female hormones on males?*

Frank C. Green, M.D., Chillicothe, Ill.

Answer.—In this age group it is not too unusual to have continued hypertrophic growth of the prostate, particularly after inadequate prostatic resection. This growth may even recur after enucleation. The cause or causes of benign prostatic hyperplasia are obscure. Sommers gives a good discussion of this problem (*Am. J. Path.* 22:185, 1956). Since there is some evidence that decreased androgens with relatively increased estrogens and perhaps additional adrenocortical steroid hormones are responsible for prostatic hyperplasia, female hormones would hardly be expected to prevent recurrence of benign hypertrophy. Some urologists feel that estrogens given preoperatively reduce bleeding during prostatic surgery. Most breast changes clinically observed in older males are the result of estrogens given for carcinoma of the prostate. The use of these female hormones in males in amounts of 3 mg. daily usually diminishes sexual activity, which returns to pretreatment levels several weeks after withdrawing the hormone.

LACERATION OF THE SPLEEN

To the Editor:—*What positive signs are available by physical examination, x-ray studies, and other methods to aid in making a diagnosis of laceration of the spleen where extensive hemorrhage has not occurred and where an enlarged spleen due to intracapsular hemorrhage is not demonstrated?*

Leon A. Frankel, M.D., Philadelphia.

Answer.—This consultant knows of no physical or x-ray signs of laceration of the normal spleen "where extensive hemorrhage has not occurred and where an enlarged spleen due to intracapsular hemorrhage is not demonstrated." A high index of suspicion would be history of a traumatic injury to the chest or upper abdomen on the left, plus a localized pain similar to those experienced when an infarction of the spleen occurs. The limitations of the question must be interpreted as so minor a degree of "laceration" that the splenic capsule has not been punctured and yet the trauma has been insufficient to produce an intracapsulary hemorrhage. Such lesions should be self-healing under the circumstances, and none of the more classic signs of laceration of the spleen would develop.

ARTHRITIC NECK PAIN

To the Editor:—*What is the best treatment for pain in the left side of the neck due to arthritis? X-ray pictures show calcification drawing the vertebrae closer together on that side. Nothing will relieve it except cortisone tablets and ACTH tablets, containing 3 or 4 mg., taken each day. Would cutting the nerve or ultrasonic therapy help?*

M.D., Illinois.

Answer.—It is impossible to give any advice regarding the pain in the left side of the neck without knowing the type of arthritis causing it. The most frequent forms of arthritis in this area are rheumatoid spondylitis and osteoarthritis. X-ray therapy is most useful for the former. The latter is frequently associated with vertebral disk disease. In general, the treatment of this consists of a neck support (a four-poster cervical support), moist heat, salicylate therapy, and x-ray therapy. If the disk disease gives intractable pain, operation may be necessary as a last resort.

CONTACT LENSES

To the Editor:—*Is there any danger in the wearing of contact lenses, especially the newer "non-contact" contact lenses for which claims are made that they do not touch the eye surface and yet are still apparently invisible?*

M.D., Illinois.

Answer.—There are two chief types of contact lenses: scleral and corneal. The scleral type overlies the sclera and cornea with a well-marked difference in curvature marking their junction. It is worn with a layer of fluid between the lens and the cornea. A modification of this type of lens is the lacrimal type, which is molded in a single curve extending over both the sclera and the cornea. It is fitted much closer to the eye than the ordinary scleral type, and the tears constitute the fluid between the cornea and the inner surface of the contact lens. The corneal lens is a thin wafer worn directly on the cornea and held in position by the capillarity of the tears; it does not require the addition of any fluid. Corneal lenses are used only in eyes in which the curvature of the cornea is relatively regular. Marked corneal astigmatism may require the use of a scleral lens.

The chief medical indication for contact lenses is a regular astigmatism caused by a corneal abnormality in which the maximal optical correction is not obtained with ordinary lenses. The commonest condition in this category is keratoconus, in which contact lenses often yield a surprising improvement in vision. Occasionally, a regular astigmatism due to corneal scarring is neutralized with contact lenses. Additionally, individuals who have had a cataract operation in one eye and retain relatively good vision in the other are frequently able to obtain binocular vision. Certain individuals with marked refractive errors, frequently myopia, may prefer contact lenses for their occupation or avocation. Professional entertainers and athletes are frequently better able to participate in their activities with contact lenses. Athletes in body-contact sports frequently use them, and there is no great danger involved since the contact lens is cushioned on the globe symmetrically and protected by the same structures which protect the eyes.

Many individuals cannot wear contact lenses because of narrowness of the palpebral fissure, tightness of the lids, nervousness, or conjunctival irritation. These lenses are probably contraindicated in patients with glaucoma, since the corneal edema of glaucoma is identical with that caused by contact lenses. Unless there is an optical reason which outweighs the seriousness of a recurrence of the original disease, they should not be worn when the cornea has been the site of inflammation, particularly that arising from the herpes simplex virus. They are definitely contraindicated in neurological conditions which have caused a corneal anesthesia. Individuals in whom the conjunctiva becomes infected or injected with slight provocation are poor candidates, as are those with a history of episcleritis. Unless there are definite optical indications, the lenses are not recommended for persons with presbyopia, since additional correction must be worn for close work. Many patients, after wearing them a short time, particularly when they are being used only to satisfy vanity, become discouraged and discontinue wearing them. Despite the large number prescribed in recent years, surprisingly few people wear them regularly.

There are two main difficulties that occur when contact lenses are worn: irritation of the cornea and conjunctiva and corneal edema. Irritation arises from the presence of a foreign material beneath the lid and commonly prevents some individuals from ever wearing them for a useful length of time. The irritation may begin as soon as the lens is inserted and is not relieved until it is removed. Local anesthesia does but little to relieve the symptoms. As the eye becomes more tolerant of the irritation, the contact lens can be worn for longer and longer periods before irritation, photophobia, or lacrimation requires their removal. Edema of the cornea is a subepithelial diffuse haziness which occurs a iable time after wearing the lens. Its occurrence extremely uncommon after wearing the corneal e of lens and occurs in nearly all patients who ar the scleral type of lens. Contact lens wearers uld be warned against persistence of wearing lenses once there are symptoms of irritation or neal edema.

OTHROMBIN TIME IN JAUNDICE

THE EDITOR:—*A jaundiced patient has a pro- hrombin time of 17 seconds. The normal con- rol prothrombin time is 14 seconds. Is this 3-sec- nd difference sufficient to cause hemorrhage at peration? If not, at what prothrombin time will emorrhage occur?* *M.D., New York.*

NSWER.—If any prolongation of the prothrombin e is observed in a jaundiced patient, an attempt uld be made to determine the cause of the hypo- thrombinemia. If it is due to vitamin K defi- ncy, which is often observed in obstructive ndice, the administration of a water soluble vita- K compound, such as menadione given orally, l promptly elevate the prothrombin level and g the prothrombin time to normal. A patient h obstructive jaundice may have only a slightly longed prothrombin time yet bleed excessively toperatively if not given vitamin prophylactical- because the prothrombin level may decrease stically due to the poor store of vitamin K in body. With a prothrombin time of 17 seconds, bleeding is apt to occur at operation, but in the reated patient the bleeding may begin after 24 rs or even later.

n elevated prothrombin time which is not cor- ted by vitamin K therapy in a patient with jaun- e usually indicates impairment of liver function. such a patient, vitamin K has probably little eficial effect and large doses may actually be mful. A patient with a prothrombin time of 17 onds which is not corrected by vitamin K therapy nlikely to bleed postoperatively.

EGNANCY AND PREDNISOLONE

THE EDITOR:—*Please give information on the effects of prednisolone therapy on pregnancy. A patient has been taking this drug for a few years to control asthma. For some time, her daily dose has been 7.5 mg. Recently she became pregnant after doctors had assured her that it was safe. After three months she had a miscarriage. On examination it was found that the fetus had been dead for about three weeks. The doctors do not agree on the cause of the death. Could it be due to the steroid drug?*

M.D., New York.

ANSWER.—There is no evidence that prednisolone causes fetal death or early interruption of pregnancy. Therefore, this patient may safely take the drug during her next pregnancy if it is necessary. In this case, a careful search should be made to find a cause for the miscarriage, and if one is found it should, of course, be remedied if possible.

ANSWER.—It is extremely unlikely that the prednisolone had anything to do with the miscarriage. There is no reference in the literature indicating any adverse effect of this drug on pregnancy, although adrenal cortical steroids have been administered to pregnant women for various conditions, such as Addison's disease, the adrenogenital syndrome, and disturbances of the Rh factor. If the patient wishes to be certain that it will be safe to try to have another child, she should undergo a thorough examination that would take cognizance not only of her endocrine status but also of her general condition. There is a fourfold rise in blood corticosteroid level of normal women up to the time of delivery.

CLIMATE AND ASTHMA

TO THE EDITOR:—*Please furnish information on the possible effect of the climate on asthmatic bronchitis, the cough and wheeze that come on during frequent bouts of respiratory infections in a child. Asthmatic symptoms are not present in the absence of respiratory infections, and the child is free from colds during the hot summer months. Response to the usual antiasthmatic drugs is poor, and recovery is rapid and complete. Growth and development are excellent. It is said that such individuals benefit in the hot dry climate of the southwestern United States, Arizona in particular.*

Charles P. Barnett, M.D., San Francisco, Calif.

ANSWER.—Many children in whom respiratory infections appear to be the cause of subsequent or accompanying attacks of coughing and wheezing appear to benefit by moving to a warm, dry climate, such as exists in Arizona. Whether this is due to the climatic change per se, some emotional tension-producing conflict in the home that was eliminated by the move, or possibly something to which the child was allergic and left behind is not always clear. The psychosomatic factor is difficult to estimate. Also, many children have an underlying allergy which flares up with a concurrent infection. It is important, therefore, that the allergic status of the child be thoroughly determined before moving to another area where similar allergens may exist or, as in the case of pollen, be present in an even greater abundance because of the warmer climate is considered.

Assuming, in this case, that the cough and wheeze are entirely due to the mechanical effects of bronchial irritation and secretion as a result of infection, it is reasonable to expect that removal to a warm, dry climate where infection and reinfection are less than in a damp, cold climate with wide variations in temperature and where overcrowding in overheated homes frequently exist should result in marked improvement. It must not be assumed, however, that respiratory infections are unknown in Arizona and other parts of the southwestern United States. They exist there, as elsewhere, although probably to a lesser degree.

Although a trial period is preferable, unfortunately it may take as long as a year to determine the benefit of such a change. It must be remembered that, if an underlying allergy exists, there is always the possibility that the child may become sensitized to his new pollen contacts.

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AIR EMBOLISM

To the Editor:—*Have there been reports of fatal air embolism due to delay in stopping the administration of intravenous fluids and permitting all of the fluid to run in and the needle to stay in place?* *M.D., Kentucky.*

Answer.—There has been no recorded instance, to this consultant's knowledge, of fatal air embolism resulting from failure to remove the needle promptly after an intravenous infusion. Since the venous pressure in the vessels used for such infusions is usually positive, there is no tendency for air to be introduced.

TREATMENT OF PROTRUDING EARS

To the Editor:—*A patient has markedly protruding ears. She is able to conceal them with her hair but would, at times, like to change her hair style. Are there available adhesive substances which can be successfully used to hold the ears back? What are the names of such products, and where may they be obtained?*

Robert H. Schaeffer, M.D., Walla Walla, Wash.

Answer.—Protruding ears may be held against the head for short periods by the use of Dermatone cement, which is available in most large surgical supply houses. The use of this material is temporary in nature and might be found to be cumbersome and unsatisfactory. Since there is a successful operation for setting the ears closer to the head together with reconstruction of the anti-helix, which is usually missing in these cases, it is felt that the operation is far more desirable in that the ears are put permanently into normal position and permanently reshaped to normal configuration. This operation is performed by all qualified plastic surgeons.

NEUROVASCULAR SYNDROME

To the Editor:—*Why is the neurovascular syndrome not considered a single clinical entity?* *M.D., Illinois.*

Answer.—The specific clinical entities encompassed by the inclusive phrase, neurovascular syndromes, are many. No entry has been listed in the Standard Nomenclature of Diseases and Operations for the syndrome because of its many etiological variations. Often some of these variations are delineated by special terminology, such as cervicodorsal outlet syndrome, cervical rib syndrome, scalenus anticus syndrome, costoclavicular syndrome, hyperabduction syndrome, subcoracoid pectoralis minor syndrome, first thoracic rib syndrome, or brachialgia statica paresthetica. All these symptom complexes have some signs and symptoms in common, but the basic factors responsible for the clinical manifestations vary and the types of treatment or correction of the condition are dependent on these causative agents.

While the phrase, neurovascular syndrome, is acceptable for medical communications, it should not be used for statement of diagnosis of a specific patient. If a specific diagnosis cannot be stated, the diagnosis listed and coded should be 080-Y00 Undiagnosed disease of upper extremity, generally, with supplementary term, 016 Causalgia, recorded as a manifestation. It is recognized that the determination of the specific disease entity may tax the diagnostic acumen and ability of the physician, but, unless this is done, treatment or correction of the condition becomes empirical. The condition must be differentiated from 221-912 Osteoarthritis of cervical spine, 978. .-4341 Compression of cervical nerve roots by protrusion of nucleus pulposus, or 2511-400.9 Herniation of intervertebral cartilage and even 000-X01 Anxiety reaction. The causative factor may be a Cervical rib 229-031 with 016 Causalgia, 241-017 Scoliosis of cervical or dorsal spine, congenital; 241-435 Scoliosis of cervical or dorsal spine due to thoracic disease; 241-5641 Scoliosis of cervical or dorsal spine following poliomyelitis or other cause; or 27.-430 Myositis due to posture (muscle to be specified). Other factors may be anomalies of trachial plexus, aberrant vascular supply, anomalies of scalenus anticus or medius muscles, kyphosis, faulty posture, compression of nerve or blood supply of arm by position of arm, new growths, aneurysms, and many others. It now becomes obvious that the treatment of the condition varies with the causative factor producing the symptom complex of pain, numbness, and discomfort in the shoulder and upper extremity and that to diagnose the condition broadly as "neurovascular syndrome" without the benefit of specific diagnosis is to do the patient an injustice.

WASHINGTON NEWS

ROM THE WASHINGTON OFFICE OF THE AMERICAN MEDICAL ASSOCIATION

'earings Scheduled on More
lealth-Medical Measures . .
ldditional Grants Speeded in
love to Fight Recession . .
ledicare Planning Check-List of
rrors on New Form . .

HOUSE COMMITTEE SCHEDULES HEARINGS IN HEALTH FIELDS

The House Interstate Committee's health subcommittee has a full schedule of hearings on a number of health and medical subjects. They started April 15 and will continue through May 19.

At the conclusion of hearings on chemical additives, April 15-16, and milk sanitation standards, April 17-18, a session is set for April 21 on redefining chemical preservatives.

On April 22 and 23 the subcommittee will take up two bills to authorize federal grants to schools of medicine, dentistry, and public health to help finance construction and equipment of teaching facilities. They would be in the nature of amendments to the present program of grants to help in building and equipping medical research facilities.

Next on the schedule are hearings May 5 through May 9 on various bills to extend the Hill-Burton hospital construction program, which is scheduled to expire June 30, 1959. Some bills would extend it two years, others five. Also to be taken up are various proposals to allow the program to make long-term, low-interest loans to sponsors who qualify for grants but object to taking money from the federal government.

Latest hearings May 13 through 16 will be on a variety of proposals to establish federal scholarships, with primary emphasis on engineering and science. Some of the bills would specifically exclude medical students, while in others the student would be eligible for help for from four to six years of college.

MORE CONSTRUCTION GRANTS GIVEN IN ANTIRECESSION MOVE

In a maneuver to place more federal money to help fight the recession, $5,800,000 in construction grants for health research facilities has been shifted from slow-moving projects to those on which rapid starts can be made. Involved is the program for allocating money for public and nonprofit institutions, with the sponsors at least matching the United States grants on a 50-50 basis.

On instructions from the National Advisory Council on Health Research Facilities, the staff of Public Health Service reviewed all existing projects with the aim of delaying allocation of money until next year in all cases where projects "had suffered unusual delays."

It was found that projects for which $5,800,000 had been earmarked out of the current fiscal year's appropriations were being held up for one reason or another. To put the money to work meanwhile, it has been reallocated to a total of 45 projects. The jobs from which the allocations were temporarily withdrawn are scheduled to receive their funds some time during the next fiscal year, which starts on July 1.

Most of the new projects were selected because their sponsors were prepared to start construction and buying of equipment immediately on receipt of the U. S. matching money. It is estimated these projects will cost a total of $25,700,000, including sponsor's money.

Recipients will include medical schools, hospitals, foundations, laboratories, and state health departments.

Largest grant, for $869,850, goes to Harvard University to help finance construction of a new basic science laboratory building.

Other large grants include Georgetown, $220,261 for research laboratories in a new diagnostic research building; Michael Reese Hospital (Chicago) $276,000 for rehabilitation of the medical research institute; Purdue, $300,000 for construction of a research building for school of veterinary medicine; Childrens Cancer Research Foundation (Boston), $400,000 for addition to a cancer research building; Duke, $215,000 for addition to a medical research building; Children's Hospital Research Foundation (Cincinnati), $325,037 for expansion and renovation of a research building; Albert Einstein Medical Center (Philadelphia), $270,363 for a new research building; and University of Wisconsin, $300,000 for a new addition for biochemical research.

OVR GRANTS $297,510 FOR FIFTEEN NEW PROJECTS

The Office of Vocational Rehabilitation announces 15 new grants totaling $297,510 to support projects designed to show how knowledge and methods acquired through research can restore certain severely handicapped people promptly to paid employment.

Projects are concerned with the near-blind, cerebral palsied, mentally retarded, epileptics, shut-ins, chronically disabled, and physically handicapped

(Continued on next page)

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persons with emotional problems. Earlier this fiscal year the OVR awarded $301,066 for 11 similar problems.

All projects, based on research conducted under the United States state vocational rehabilitation program, are designed as models to encourage similar activity by states and communities and to create understanding of and participation in rehabilitation.

Four of the new projects are to establish optical aid clinics, three to set up evaluation centers for the cerebral palsied, three for occupational training for the mentally retarded, and two for adjustment centers for handicapped who also have emotional problems. Other projects are an occupational center for epileptics, an industrial homework program for home-confined handicapped, and a project to evaluate vocational capabilities of long-term, chronically ill hospital patients.

In each case sponsors pay a "substantial part" of the project costs. Grants are for three years, after which time the OVR expects the local communities to assume full responsibility.

MEDICARE WORKING ON NEW FORM FOR SUBMISSION OF CLAIMS

The Office for Dependents' Medical Care is asking the opinion of physicians and dentists on a new form to be used in submission of claims for service. It is expected that the form will be ready for use by August and made a required procedure in September.

Medicare is particularly anxious to get the profession's opinion on a suggested check list of common errors in filling out the form, which would be printed on the reverse side, and to receive ideas for the common errors. Such a listing, Medicare points out, probably would eliminate much correspondence that now is required when errors are made.

With the check-list, the form would be returned to the physician or dentist, with his errors indicated on the reverse side.

ARMY MEDICAL SPECIALISTS INCREASING RAPIDLY

A survey shows that last year almost as many Army medical officers earned specialty board certifications as there were specialists in the Army 10 years ago when graduate professional training programs were started.

In 1947 there were only 140 diplomates in the Army. In contrast, in 1957 103 Army physicians and surgeons successfully passed the examinations, as did seven dentists and three veterinary medical officers. At the end of the year the Army had 557 medical officers who were diplomates, ranging over 34 specialties. The dental corps had 51, the veterinary corps 11, and the medical service corps 12.

Commenting on the success of the graduate training program, Army Surgeon General Silas B Hays said:

"In our modern Army, personnel are given assignments in accord with the nation's needs and with individual education and experience. A large percentage of our senior medical officers are board eligible or board certified, in direct contrast to 1945 when only a few board eligible surgeons were on duty in the Army.

"Army medical officers are as interested in the evelopment of their individual careers as are vilian physicians and scientists. The alert officer ill find many opportunities for advancement hrough his professional assignments and contacts hile on active duty."

URVEY SHOWS VALUE OF "OPEN HOUSES" AT MENTAL HOSPITALS

A survey sponsored jointly by Veterans Administration and three universities suggests that "the ugaboo of fear that has long come between a ental hospital and the surrounding community" an be dispelled in part through visits or "open ouse" programs.

The survey was taken on "hospital day" last year, hen 30,000 visitors appeared at the Chillicothe, hio, VA hospital. Senior and graduate students rom Ohio Wesleyan, Ohio State, and Ohio universities interviewed the visitors.

Although data have not been completely analyzed, the VA says these findings already have appeared:

1. Twenty-three per cent of those interviewed said that they obtained a better understanding of mental illness through their visits.
2. Thirty-six per cent said they obtained valuable information on the particular hospital's facilities and practices.
3. Nineteen per cent indicated that they had been motivated to learn more about mental illness.

Summarizing the survey, Dr. Sam Beanstock, manager of the Chillicothe hospital said:

"Mass visits of the general public to hospitals, such as are encouraged by Hospital Week programs, help to overcome the unfortunate stigma that has been attached to mental illness. Since the patient must be given a chance to again become a part of a community, the community must possess greater knowledge and greater interest in the programs of mental hospitals"

DR. HESS ASKS STATE COMMITTEES TO GO ON STAND-BY BASIS

Dr. Elmer Hess, chairman of the National Advisory Committee to Selective Service, has asked the affiliated state committees to continue voluntarily on a stand-by basis "so that in case of an emergency we could go into full-scale operation on short notice."

A notice sent to chairmen and members of the state advisory bodies says in part: "I hope that you will continue to serve in this capacity. If there is any reason why you cannot, will you inform us as soon as possible, so we can keep our stand-by lists up-to-date? From time to time, while you are on a stand-by basis, you may be asked for an opinion concerning certain individual cases. While there are not many of these, they do occur occasionally and I hope that you will be willing to carry on this minor activity."

Dr. Hess also informed the state committee-men that all who will be in attendance at the June meeting of the American Medical Association in San Francisco are invited to meet with the national committee on one of the early days of the meeting.

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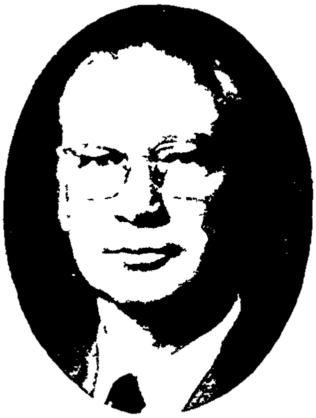
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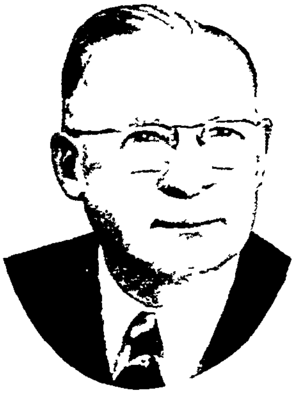
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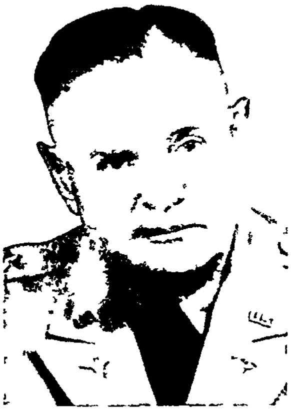

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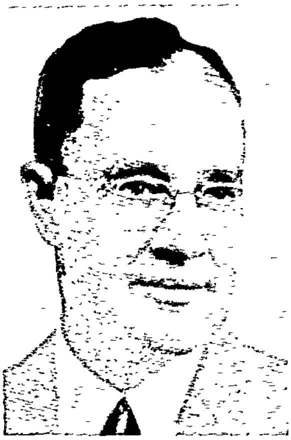

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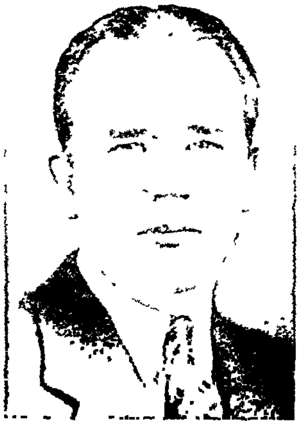

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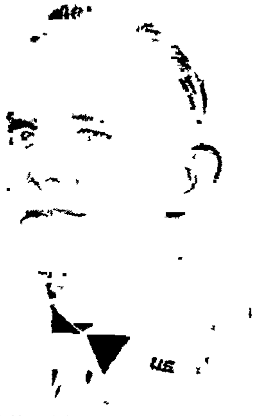

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PROGNOSIS AND TREATMENT OF MULTIPLE SCLEROSIS—QUANTITATIVE NOSOMETRIC STUDY

Leo Alexander, M.D., Austin W. Berkeley, Ph.D.
and
Alene M. Alexander, Boston

Over an eight-year period, 554 patients with multiple sclerosis received 5,635 scored neurological examinations. The evaluations concerned the scoring method, a study of the specific population, the course of the disease, the characteristics of the attacks, and the effect of treatment on the disease. Observations on the annual incidence favor the probability that the disease is endogenous. Treatment study included the effect of vitamin therapy, blood transfusions, and corticotropin administration, with only the latter two showing an objective quantitative effect.

HE intensive quantitative study of the course of multiple sclerosis and the influence of various forms of treatment has yielded results of practical as well as tical interest. Our study was carried out in tients who were followed for one to eight the average being three years.

ought adequate and precise evaluation of ssion as well as regression of any disease de- on quantitative measures, the difficulties of icing these measures in neurology have long d their application to that science. The basis study was repeated quantitatively scored ogical examinations. A total of 5,635 examina- vere carried out, and 1,412 patient-years, dis- d over a duration span from the 1st to the ear of illness, were analysed and studied by tative methods. The mathematical statistical is was supplemented by correlation analysis he aid of the IBM electronic computing ap- s at Boston University.

analysis covered five major areas, including opulation of the study, (2) scoring method, ourse of disease, (4) characteristics of the of the disease, and (5) effect of treatment. will be reviewed separately.

Population of the Study

The first part of the analysis was concerned with population of the study and its representation of the disease as compared with the population in other biometric reports. Distribution of the 554 patients by age at onset of the disease showed the characteristic pyramidal curve with its peak in the 24th year of life (fig. 1) and the characteristic distribution of

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the Neurobiologic Unit and Multiple Sclerosis Research Clinic, Boston State Hospital, and the Department of Psychiatry, Tufts University School.

males and females (38% males, 62% females) as described by other investigators[1] (see table). This led to the conclusion that our cases indeed constituted a representative sample of the disease characterized by its age and sex distribution.

A new conclusion based on our findings of annual incidence showed that the cumulative yearly incidence of multiple sclerosis plotted separately for the sexes showed a regular annual incidence for both sexes for the years for which our case material contained adequate samples (fig. 2). This fact favors the probability that the disease is endogenous in origin rather than due to an exogenous (infectious) agent.

Distribution of Cases of Multiple Sclerosis in Men and Women (1939-1948)

	Male		Female		Total	
	No.	%	No.	%	No.	%
Denver (Kurland[14])	25	27.8	65	72.2	90	100
Winnipeg (Kurland[15])	27	38.6	43	61.4	70	100
Boston (present study)	125	38	204	62	329	100

Scoring Method

The second area under study was the validity, reliability, and statistical characteristics of the scoring method.[2] The progression and regression of the scores in time were found to be representative of the course of the disease as correlated with the subjective report of each patient, his objective capacity to perform the tasks of his work and daily living, the investigative report of the social worker, and the clinical conclusion of the examining physician independent of the score computed.

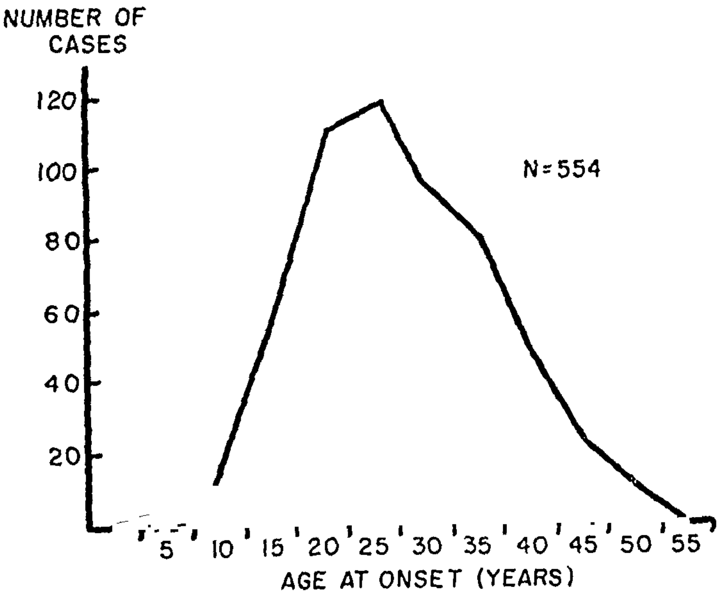

Fig. 1.—Frequency distribution of age at onset of disease in years in total sample.

The reliability of the score was established by the correlation coefficient between scores obtained by six different examiners. This correlation coefficient was high (0.95). Variations in score exceeding 10% in either direction were significant and valid. This places our scores on a par with the reliability of a blood cell count. The statistical characteristics of our score rendered it particularly meaningful when it was expressed in terms of the square root of the score.

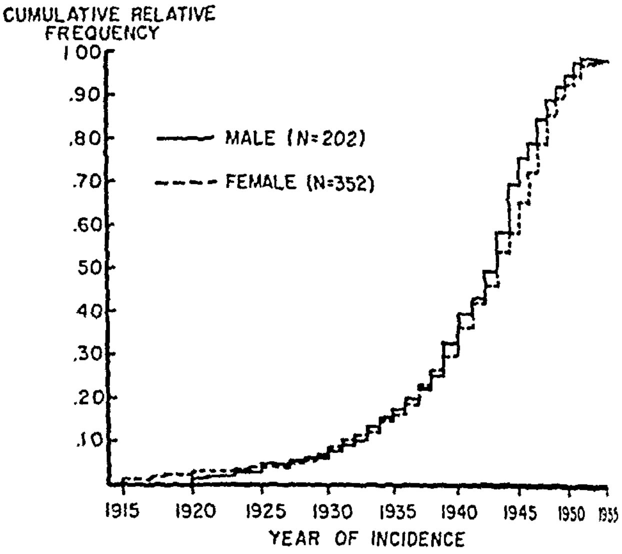

Fig. 2.—Cumulative yearly incidence of multiple sclerosis separately for men and women, showing regular annual incidence in years with adequate samples.

Course of Disease

Third, the course of the disease in time was studied. For the purposes of this investigation, patients were grouped by illness-years and the average score for each illness-year was computed for each patient. Then the mean examination score for all patients as a function of each illness-year was determined. The resulting curve (fig. 3) conformed to

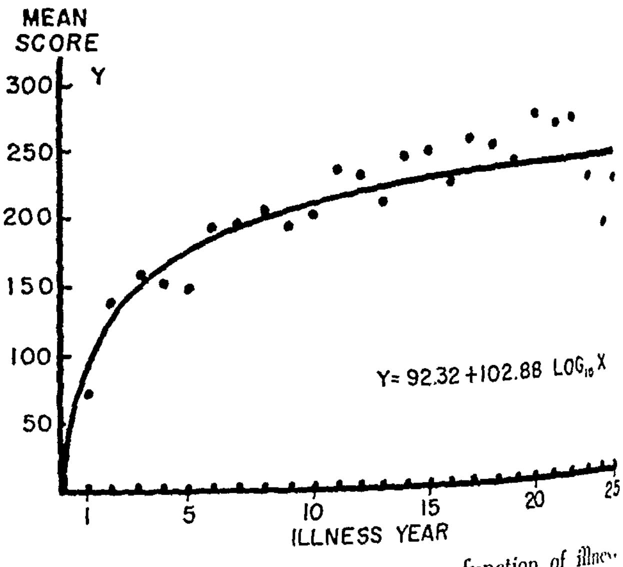

Fig. 3.—Mean examination score as function of illness-year (all cases).

the formula $y=92.32+102.88 \log_{10} x$. For the group of patients as a whole, this curve, charting the annual illness scores, rises sharply during the first five years and then flattens out, the rise becoming less sharp during the next two years and ly slight from then on. This indicates that the sease is most active during the first five years and bsequently becomes less active, and lends support the clinical observation reported by Müller [3] that e disease does its worst damage during the first

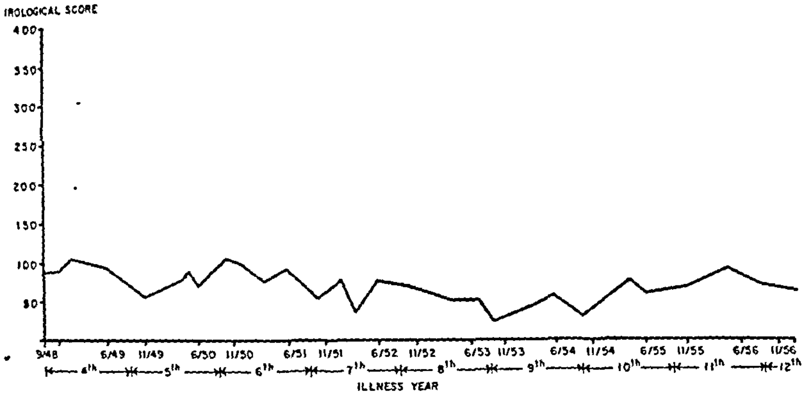

Fig. 4.—Course of disease in one patient with neurological score from 4th to 12th year of illness.

five years of its course. What progression takes place later may then be due to slow scarring rather than to further attacks of the disease itself.

Study of long-term graphs based on our scores in individual patients (fig. 4) indeed bears out the fact that when damage during the first five years was slight the subsequent course tended to be mild also, in conformity with the formula given above. The reliability of this prediction, while established for specific groups of patients, will yet have to be established for all individual cases by further mathematical analysis.

It would be important for the practical life plans of patients if the future course of the disease could be predicted on the basis of the critical score reached at the five-year mark. It is highly probable that this might be possible through further pursuance of this method of study.

The course of the disease, based on the quantitative score for each year, was then applied to a variety of subgroups. When males and females were studied separately, the course was found to be identical for both, disproving earlier impressions recorded in the literature that the course of the disease is more severe in men.[3] We then established the course of the disease in three subgroups, based on age of onset: 24 years or less, 25-32 years, and 33 or more years. Again, the courses were found to be identical for all three subgroups. We then divided our patients into two groups, those attending the clinic or office continuously (continuous group) and those who visited only once, were self-discharged, or died at any time during the eight years of our study (discontinuous group). Here a striking difference emerged (fig. 5). At the crucial five-year level, the mean score of the continuous group was 125 (which signified only minimal disability), while that of the discontinuous group was 200 (signifying moderate disability). During the subsequent 20 years the mean score of the continuous group rose only to 200, while that of the discontinuous group rose to 270, signifying severe disability. Patients in the discontinuous group reached the wheelchair level (corresponding to a score of 260) at the 16th year of illness, while those in the continuous group stayed below that level at all times.

This finding constituted quantitative proof of McAlpine's [4] clinical impression that two forms of the disease exist, an inexorably progressive one and a mild form of the disease. It appears from our data that we can predict which of the two groups a patient is going to be in at the five-year point of the illness. If the score at that time is not greater than 125, or, better still, decisively below 125, we feel confident that we can predict a mild course for that patient. If the score is 200 or above we can predict a severe course. There is, of course, some overlap between these two groups, but further mathematical study of these data and of data subsequently to be collected will reveal the range of the score levels at this crucial period at which reliable predictions may be made.

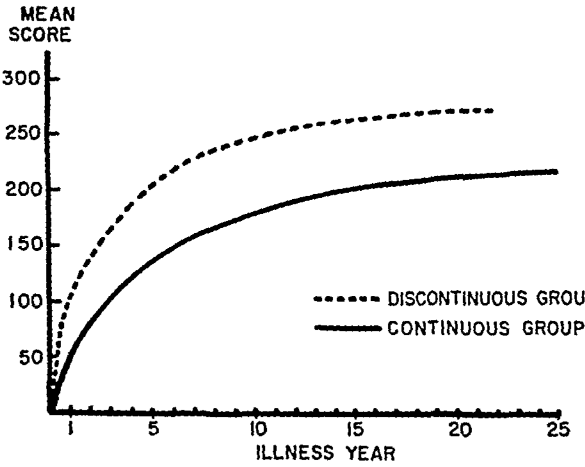

Fig. 5.—Mean score, as function of illness-year, for patients attending continuously and for those who visited only once, were self-discharged, or died.

Frequency and Characteristics of the Attacks

When the annual course of the disease in our patients was studied it was found that 24% of the illness-years were free from attacks (fig. 6), the patient either improving (type 1) or holding his own throughout the illness year (type 2). Such benign courses may last from one to five consecutive illness-years in any one patient. If all illness years are considered, patients in this study suffer 0.75 attacks per illness year, or one attack for every 16 months. Thygesen[5] reported a similar incidence rate for attacks.

Attacks are classified in the following four types, shown graphically in figure 6: (1) attacks from which the patient fully recovers (type 3); such patients are classified as resistant to attacks; (2) attacks followed by partial recovery (type 4, the diagram to the right); (3) attacks terminated by formation of a plateau (type 5); and (4) attacks followed by inexorable progression of the disease (type 6).

Study of the individual attacks was based on the study of the following six variables: (1) duration of the illness at the start of the attack; (2) the initial level, that is, the score point at the start of the attack; (3) the attack period, that is, the duration of the attack from start to peak; (4) the peak level, that is, the highest score at the peak of the attack; (5) the recovery period, that is, the time from the peak to the termination of the attack; and (6) the final level, that is, the score at the termination of the attack after maximal recovery has taken place.

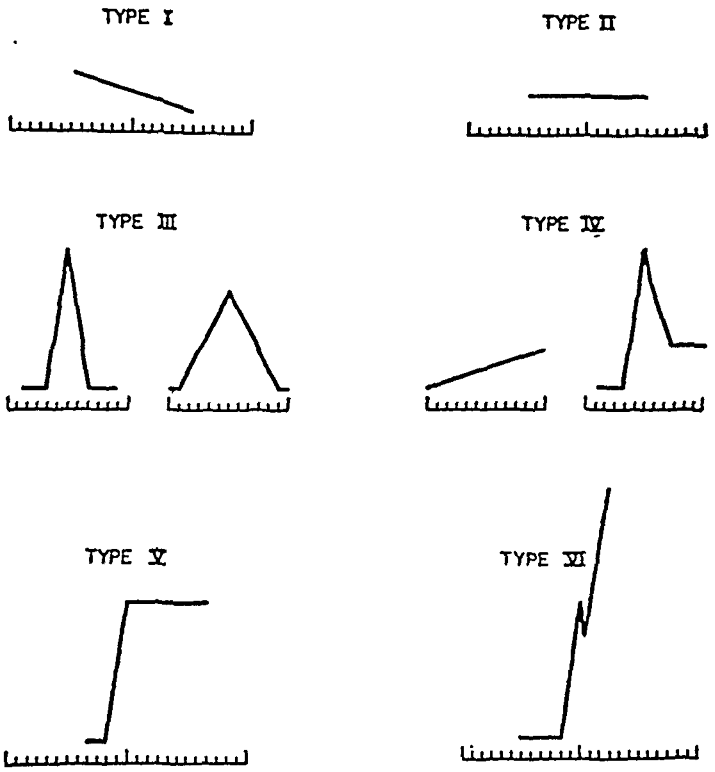

Fig. 6.—Types of annual course of disease.

Calculations of the correlations of these items revealed conclusions of which the following five are clinically the most significant.

First, recovery after an attack is negatively correlated (-0.22) to the duration of the illness. This means that the longer the duration of the illness, the better is the capacity of the patient to recover from an individual attack. Attacks without recovery, followed by inexorable progression of the disease (type 6), occurred predominantly during the early years of the illness and were rare or absent later; the average duration of illness at the time of such attacks being five and one-half years. Seventy-five per cent of such attacks occurred in the first seven years of the disease and 55% in the first five years. This finding confirms the conclusion derived from the study of the over-all course of the disease described in the previous section in that it indicates that the capacity to recover from a given attack improves with increasing duration of the illness, in the nature of an immunity developed as the disease progresses in time.

Second, the recovery level is positively related to the initial level (+0.42). This means that the more serious the initial illness, the less likely is the patient able to attain restitution after an additional superimposed attack. This finding confirms the evidence concerning the marked and significant differences in resistance to the illness existing between patients, resulting in the manifestation of a mild and severe form of the disease.

Third, the recovery level is positively related to the extent of the attack (+0.47). This merely confirms in a quantitative way the known clinical experience that mild attacks result in relatively more complete recoveries than severe attacks.

Fourth, the recovery level is related (+0.29) to the acuteness of the attack (that is, the time elapsing from initial point to peak), all other variables being held constant. This means that the more rapid the attack the better is the grade of the recovery.

Fifth, the recovery period is positively related to the attack period. The correlation was +0.36 for attacks resulting in full recovery and +0.26 for attacks resulting in only partial recovery. This means that there is a symmetry between the pace of the attack and the pace of recovery (somewhat comparable to the bounce of a rubber ball), which suggests the assumption of a resistance factor in the patient brought into play by the attack.

Effect of Treatment

The fifth area to be studied was the effect of treatments on the course of the disease. Treated patients were compared with matched control patients, and the course of the illness was compared for each pair separately and for the two groups as a whole. Our patients were matched not only by age, sex, and duration of illness but also by illness score at the start of treatment and by the preceding course of the illness as scored quantitatively, extending back for as much as a year prior to treatment (fig. 7).

Vitamin therapy, with the added use of muscle adenylic acid (My-B-Den), had no measurable effect on the course of the disease in 170 patients, as compared to its effect in 170 matched control patients who did not receive muscle adenylic acid (fig. 8).

Blood transfusions (500 cc. of whole blood or its quivalent in freshly spun-down plasma) once eekly for six weeks [6] produced a significant effect n the course of the disease, which expressed itself a favorable turn in the treated cases (n=45), manifested by a consistent decrement in score which averaged 18 points (while the score of the matched controls continued to rise by 12 points); the difference between 24 treated patients and 24 individually matched controls amounted to an average of 30 score points (fig. 9, center graph). This favorable effect remained in evidence over a period of 16 months following the treatment. It is of interest that this average period is identical with the average incidence rate of attacks. This finding means that blood transfusions aid in the resolution of attacks by conveying a resistance factor from the blood of the donor to the patient, but they do not protect from subsequent attacks.

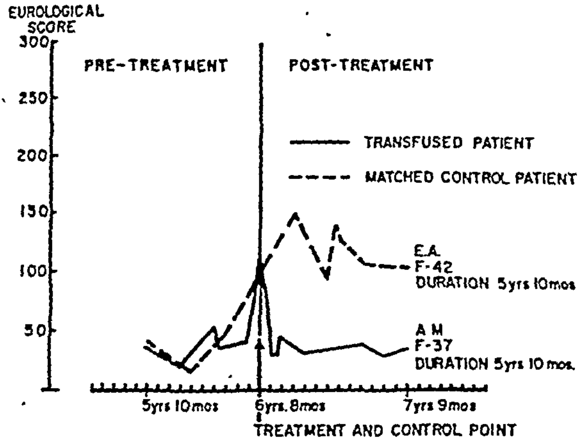

Fig. 7.—Neurological score before and after treatment, in comparison to course of untreated matched control patient.

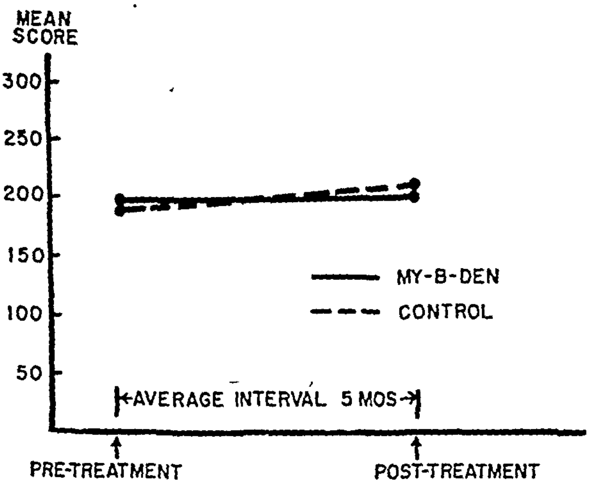

Fig. 8.—Effect of muscle adenylic acid (My-B-Den) on course of disease.

The advantage of transfusions was most striking in the group of patients with the lowest spontaneous recovery potential, i. e., those in whom there was no active progression during the four-month period prior to treatment and whose acuity index (percentage score increase per month) was less than 4 (fig. 9, right graph). In these patients, the average difference in final level between the treated group and the matched control group amounted to 60 score points. However, in patients with acute disease, i. e., those in whom there was active progression during the four-month period prior to treatment (acuity index equal to or greater than 4) and whose spontaneous recovery potential was high, the difference between the treated group and the control group was insignificant (fig. 9, left graph). This observation suggests that the resistance factor conveyed by the transfusions may be of the nature of an enzyme, since its effect tends to be striking and crucial in the group of patients in whom this factor is expected to be naturally low while it does not add cumulatively to the resolution of the attack in those patients in whom the resistance factor is expected to be naturally high.

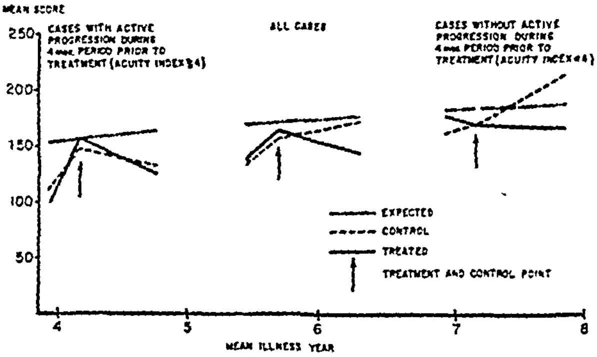

Fig. 9.—Mean examination score as function of mean illness-year in patients who received transfusions and in comparable patients who did not.

We can conclude, therefore, that blood transfusions have their place in the treatment of early and relatively mild cases in patients who have infrequent attacks and are without progression of disability due to scar formation in the intervals between attacks. The range of indications for the most effective employment of transfusions will have to be determined by further mathematical study of case material that makes due allowance for all the other influences on the course of the illness which this correlation study has revealed so far.

Corticotropin (ACTH) therapy [7] has a significant effect in the direction of improvement, the average point reduction in 22 cases, as compared to 22 matched control cases, being 80 points (fig. 10). It not only aids in the recovery from attacks but, if an adequate maintenance regimen is continued [8] after resolution of an attack treated intensively, prevents or reduces frequency and severity of subsequent attacks, as well as preventing the gradual progression of disability due to scar formation in the intervals between attacks (fig. 11). If an attack occurs while maintenance dosage is being given, it can be promptly aborted by increasing the dose. Corticotropin therapy is, therefore, the treatment of choice at the time of the fullblown, moderate to severe development of the disease when attacks are relatively frequent and progression of the disease continues during the intervals. It may be of decisive benefit even in the most severe and chronic cases and may bring about improvement from a bedridden or wheelchair-bound existence to an ambulatory state. The quantitative study of the patients treated by this method over a period now approaching four years is yet to be completed.

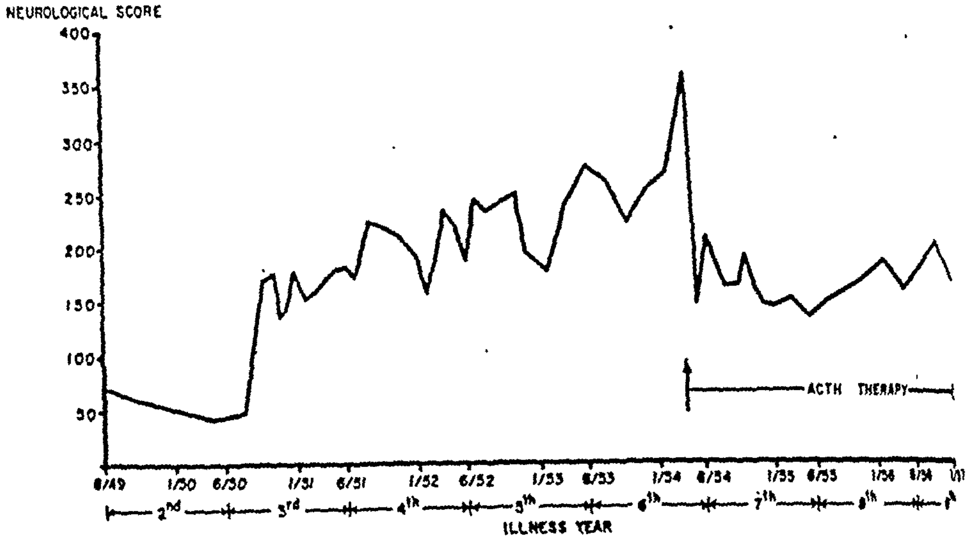

Fig. 11.—Effect of corticotropin (ACTH) therapy on course of disease in one patient observed from 2nd to 9th year of illness.

Cortisone, given in 38 cases, and prednisone (Meticorten), given in 25 cases, were seen not to have a comparable significant effect when studied in conjunction with an equal number of matched control cases. This seems to indicate that the adrenal hormones responsible for improvement under the stimulating effect of corticotropin may be hormones in addition to or other than cortisone.

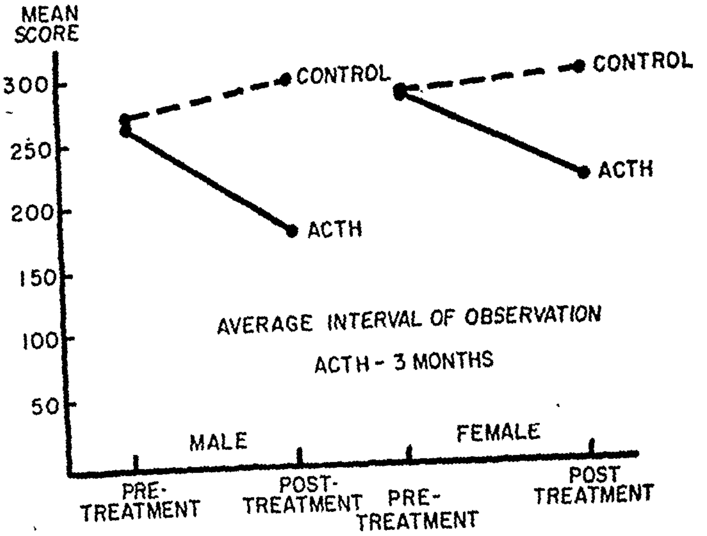

Fig. 10.—Effect of corticotropin (ACTH) therapy on course of disease. Mean scores in 22 treated patients and 22 untreated matched control patients (14 male, 8 female).

Summary

The introduction of a quantitative method and its systematic use over eight years has supplied data suitable for quantitative statistical analysis. A total of 5,635 scored neurological examinations were carried out on 554 patients with multiple sclerosis. Observation extended up to eight years. Each examination was scored quantitatively,[2] and reliability coefficients of 0.95 or better were established. Plotting of the scores allowed a graphic representation of the course of the disease in time, and observations were made over a duration span of illness up to 25 years.

The general course of the illness was studied for all patients as well as for specific subgroups distinguished by sex and age at onset of disease and by inclusion in various treatment and control groups. We have established evidence that a severe and a mild form of the disease exist, although there is some overlap between these two groups. On the basis of our quantitative method, the severe and the mild cases can be distinguished from the sixth year of the disease onward, since the relatively most active progression of the disease takes place during the first five years. Evaluation of treatment, therefore, requires comparison with carefully matched controls. Studied in this way, the only treatments showing an objective quantitative effect on the course of the illness were repeated blood transfusions and corticotropin (ACTH) therapy; the effect of the latter was maintained over periods now approaching four years.

433 Marlborough St. (15) (Dr. Leo Alexander).

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CLINICAL TOXICOLOGY AND THE PRACTICING PHYSICIAN

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Several general principles are helpful to the practicing physician in arriving at the proper diagnosis in cases that involve clinical toxicology. The most important information the physician needs to know is what the working environment of the patient is like. Other factors include knowledge of the general housekeeping of the industrial plant involved, the general level of personal hygiene, and predictions of, and pertinent but not misleading data on, toxic action. Finally, the practicing physician should know where he can turn for advice when he suspects toxic reactions in patients.

It has been said that 95% or more of employees in American industry have no medical services in the industrial plant. It is generally agreed that the full-time industrial physician knows enough about industrial medicine, industrial toxicology, and industrial hygiene, or sources of such information, to provide adequate industrial medical services to those employees for whom he has responsibility. This means, therefore, that adequate industrial medical services are being provided to about 5% of the American workers. What about the remaining 95%, whose industrial medical services are being provided by the busy general practitioner? It does not necessarily follow that they are all not being given adequate industrial medical services, but I have heard it stated often by general practitioners that they cannot hope to know enough about the toxicology of all the new compounds, materials, and processes used by industry. They say that they are so busy keeping up with the clinical advances of medicine that there is little time left for them to keep up with the advances in toxicology and industrial hygiene. "Are there not," the physician inquires, "basic principles which I can find useful in attempting to understand these fields?" In response to these queries, an attempt is made in this paper to outline certain general principles and concepts which the practicing physician might find of value in assisting him to decide whether or not a given set of symptoms in a patient he is treating might be the result of toxic exposures in his occupation.

Working Environment

Perhaps the most important information the physician needs to know is what the working environment of the patient is like. This may sound a far

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cry from toxicology, but it is, nonetheless, extremely important in clinical toxicology. For instance, in figure 1, it is noted that a girl is applying a solution on a strip of material. It is important to note that any volatile solvent present will rise directly into the girl's breathing zone. The supposition is warranted that exposure in such a case is high; thus, the doctor's index of suspicion should rise. On the other hand, in figure 2, a plating operation is in progress. It is important to point out the slot exhausts around the plating tank and the grilled flooring. It is obvious that considerable thought has been given to the control of exposure in designing the equipment. It is probable that with this degree of thought no trouble exists, but it may be desirable to have air measurements by industrial hygienists to insure that the control is adequate and in good working order. Finally, as shown in figure 3, complete protection can be provided, if necessary. The only clinical toxicity possible in this situation would occur if there were a break in the suit or air-supply line or if the intake of the air line were misplaced so as to draw in toxic substances. It must be evident, however, that if a company goes to the extreme shown in this figure it must be very alert to all hazards, so that the probability of clinical toxicity arising, although certainly not absent, most assuredly is remote. These three examples have been used to illustrate the importance of knowledge about the specific working environment.

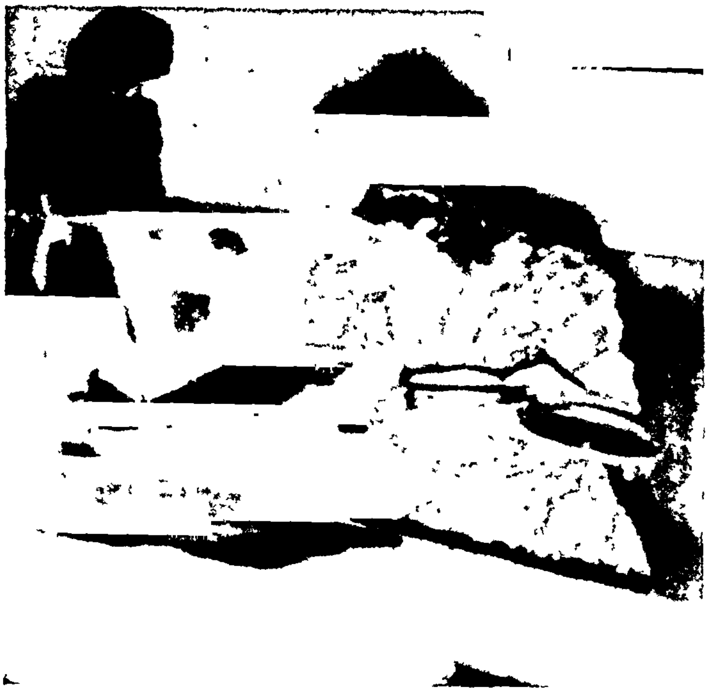

Fig. 1.—Rubber solution being applied to fabric in poorly controlled operation.

Industrial Housekeeping

The next general principle the physician needs to be aware of is the nature of general housekeeping procedures within the plant. Is the plant clean, or is it cluttered with discarded equipment? Are units painted, or have they been permitted to accumulate grime and dirt? Are pumps, valves, and joints leaking material which is permitted to lie around in puddles, or are leaks promptly repaired and spills cleaned up? The point to be made here is that in a plant in which a great deal of attention is paid to the details of good housekeeping a similar degree of attention to other details will be paid and the probabilities of accidental exposures from leaks and spills will be minimized. We all know that food poisoning from a clean, sanitary restaurant is much less likely than from a dirty, sloppy one.

Employee Hygiene

The third important bit of information for the doctor to know is the level of personal hygiene of the employees. Do they wear dirty clothes in their work? Are their hands clean? Are wash facilities available and of a standard to encourage use? An example may be of use in illustrating the point. A certain factory had trouble with dermatitis among its employes. A review of the cases showed that they all occurred in men working in one long building. The men were doing piecework, and inspection revealed that all the wash basins were at one end of the room. Furthermore, the dermatitis was occurring among those men located at the end of the room farthest from the wash basins. The explanation was that these men lost so much time from their work in walking to and from the wash basins that they did not wash. The solution was to install wash basins at both ends of the building. The solution of this problem in clinical toxicology, in this instance, was as mundane a thing as installing wash basins in the proper location—not a highly technical solution, but highly practical.

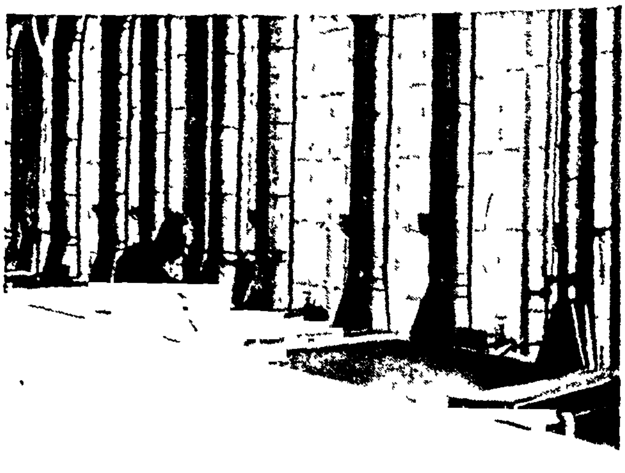

Fig. 2.—Metal plating tanks with adequate lateral slot local exhaust system and grating on floor to minimize or eliminate any exposures.

It will be necessary for the physician to gather the above information from a personal visit to the plant. This can usually be arranged easily and expeditiously by a simple phone call to the superintendent of the plant or to the personnel director. It can be accomplished with a minimum of time, will pay vast dividends to the physician by acquainting him with modern industrial practices, and will make him much better qualified to assist in performing the preventive aspects of his industrial medical practice. Furthermore, it acquaints the plant management with the physician and will lead to more harmonious relationships in all future dealings between them. There can be no real substitute for first-hand information or for person-to-person relationships between doctor and management. Of course, if the plant has a full-time medical department, a visit can always be arranged through the nurse or physician. This type of information is just as important in arriving at a proper diagnosis as a careful history and physical examination and accurate laboratory work. It should become a part of the routine examination of all patients suspected of having industrial intoxication.

Toxicity of Chemicals

Next, it is important for the practicing physician to realize that it is extremely difficult and dangerous to predict toxic actions from the chemical formula. Numerous examples of this exist. It need only be mentioned that methyl alcohol (wood alcohol, CH_3OH) is quite different toxicologically from ethyl alcohol (grain alcohol, CH_3CH_2OH). It is not generally recognized, however, that as much difference exists between benzene (C_6H_6) and toluene ($CH_3C_6H_5$). In interesting work performed in our laboratories by Gerarde,[1] it was shown that benzene has a serious effect on the bone marrow whereas toluene does not; yet they differ only in the presence of a methyl group in the latter. Furthermore, benzene appears unique in its effect on the bone marrow, since xylene $(CH_3)_2$ C_6H_4, durene $(CH_3)_4$ C_6H_2, and all benzene compounds substituted with side chains thus far tested have behaved like toluene. Even compounds with the same formula but different isomers may be different in toxicity. Thus, the ortho, meta, and para isomers of tricresyl phosphate have different toxicities. Finally, 8-hydroxybenzpyrene is said to be noncarcinogenic, but benzpyrene is carcinogenic. They differ in formula only by an OH group, yet they apparently have quite different activities. From what has been said, it should be obvious that attempting to predict the toxicity of one compound by comparing it with the formula of another compound whose toxicity is known is a highly dangerous and often misleading procedure. It should not be attempted except by the most experienced toxicologist, and he would attempt it only most cautiously.

Neither is it possible to predict chronic toxicity from data on acute toxicity. Two of the benzene hexachloride isomers, the beta and gamma isomers, may be used to illustrate this. The oral LD_{50} of the beta isomer (for the rat) is 6,000 mg. per kilogram, as compared with only 125 mg. per kilogram of body weight for the gamma isomer. Conversely, in two-year rat-feeding studies, the beta isomer shows toxicity at 10 ppm, whereas the gamma isomer shows toxicity only at 100 ppm. Thus, the gamma isomer is more toxic acutely, and the beta more toxic chronically. The only difference in the two isomers lies in the position of one chlorine atom in the molecule. They both have an empiric formula of $C_6H_6Cl_6$. This example should suffice to caution the novice in attempting an interpretation from acute to chronic or vice versa.

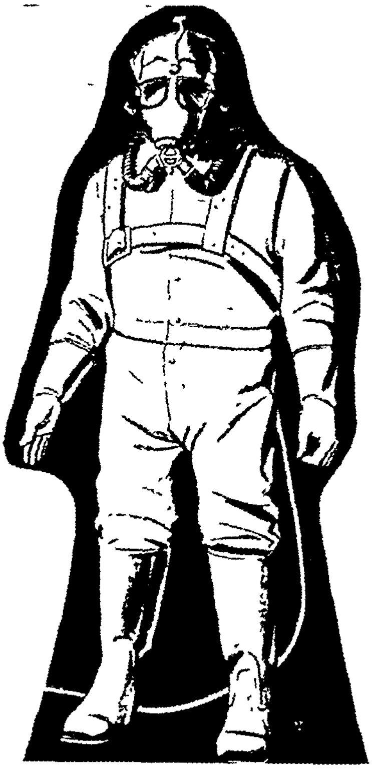

Fig. 3—Full protective suit recommended for cleaning of certain tanks in the petroleum industry. This provides complete skin protection, and air is supplied from the outside through hose. Exposures are impossible through such suits.

Toxicity is not an absolute term. The route of contact may be extremely important. Thus, some materials that are quickly absorbed from the gastrointestinal tract or lungs may not be absorbed at all through the skin. Conversely, some materials are rapidly absorbed through the skin. Thus, workers have been known to develop toxic reactions to aniline from stuffing a rag soaked with aniline in their pocket, due to the fact that aniline is absorbed so easily through the skin. The dilution of one material by another may markedly affect its absorption through the skin. Thus, tetraethyl lead in concentrated form goes through the skin easily, but in the concentration found in gasoline it is not absorbed through the skin. In spite of this, I have heard an otherwise well-qualified physician state that a patient might develop lead poisoning from tetraethyl lead absorption through the skin after exposure to leaded motor gasoline.

It should be remembered that the various organ systems of the body have only limited ways in which to respond to toxic agents. In many cases this response is similar to or identical with the responses to infectious agents and to the aging process, or to "naturally" occurring diseases. Thus, viruses or too much whiskey (in the absence of proper food) can seriously damage the liver, as can toxic agents, such as carbon tetrachloride. Arteriosclerosis or anesthetics, such as alcohol and ether, may impair mental alertness just as high levels of hydrocarbons do. Infections, high blood pressure, or obstruction may impair kidney function, and so can carbon tetrachloride or mercury. Age or chronic infections may impair pulmonary function just as fibrosing dusts do. Two illustrations may emphasize the points being made. In a plant a worker came to the medical director with vague complaints. Examination showed liver damage. Questioning revealed that the man worked with carbon tetrachloride. Review of his work, however, indicated no significant exposure. Subsequently, several other workers came in with evidence of liver damage, but their work entailed no exposure to carbon tetrachloride. It then became evident that a mild epidemic of infectious hepatitis was present among the employees and that this was unrelated to occupation. Conversely, an employee of a large hospital was admitted with a diagnosis of infectious hepatitis. After examination it was concluded that he had a toxic hepatitis of unknown cause. After discharge from the hospital, it was discovered that his work consisted of cleaning the electric motors on the hospital refrigerators and that he used carbon tetrachloride for this. It subsequently was discovered that six men in all were assigned to this work and that all six had impaired liver function. Subsequent industrial hygiene review indicated that they were being excessively exposed to carbon tetrachloride. The point of these two illustrations is that the physician must always be alert to all possibilities and should not come to premature conclusions until he has investigated all possible causes of the physiological derangement he has observed. Toxic reactions may simulate many other diseases. Few specific toxic tests are available to the physician, so he must rely heavily on work conditions and industrial hygiene evaluation in arriving at the correct diagnosis.

Sources of Information

Finally, the practicing physician should know where he can turn for advice when he suspects toxic reactions in patients. Today, one very useful source of such information is the poison control center. These are springing up throughout the United States, and the practicing physician should know the location of the one nearest him and use fully its store of information. Second, industrial physicians generally know more about toxicity than general practitioners. If there is a full-time industrial physician in the vicinity, he would be more than willing to provide toxicological information to his confreres. Third, state health or labor departments frequently have industrial medicine and industrial hygiene services which can provide toxicological information and industrial hygiene advice. With the concurrence of management, full use of these services, including surveys, should be sought. Fourth, either individual or group consultants are available who, with the concurrence of management, can provide expert advice and counsel in toxicology and industrial hygiene for a fee. The Industrial Hygiene Foundation, Inc., of Pittsburgh is one such group, and any full-time industrial physician will know several individual consultants who can offer advice. Such groups or individuals should be used by the practicing physician as he would use a consultant in clinical medicine. They should be used to survey the plant and make their recommendations to the physician and management. Finally, but not least, the files of the Industrial Medical Association contain much toxicological information, and Dr. Holmblad, its managing director, is more than happy to make these files available on request. A note dropped to Dr. Holmblad will always bring helpful advice and counsel.

Summary and Conclusions

The practicing physician cannot hope to keep in his head, or even in his office, a complete file of toxicological information. Several general principles, however, are helpful to him in arriving at the proper diagnosis in cases of suspected clinical toxicology: 1. Knowledge of the working environment of the patient is essential. 2. Knowledge of the general housekeeping of the plant involved is helpful. 3. Knowledge of the general level of personal hygiene of other workers and the specific personal hygiene of the patient is most helpful. 4. Predictions of toxic action from chemical formulas may be misleading. 5. Chronic toxicity cannot be predicted from data on acute toxicity. 6. Toxicity is not an absolute term; information on the possible routes of absorption should be developed. 7. The body has limited ways of reacting, and many toxic reactions present the same picture as "naturally" occurring diseases. 8. Sources of toxicity information and help include poison control centers, full-time industrial physicians, state health or labor departments, private and group consultants, and the files of the Industrial Medical Association.

Box 45.

Figure 2 is reproduced with permission of the B. F. Sturdevant Company, Boston. Figure 3 is reproduced with permission from Accident Prevention Manual No. 1-B, American Petroleum Institute, New York.

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DANGERS ATTENDING ELECTIVE INDUCTION OF LABOR

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The advantages and dangers of elective induction of labor were studied by comparing the course of spontaneous labor in 1,290 patients with the course of induced labor in 325 other patients, all patients being healthy multiparas. There was no appreciable increase in the incidence of maternal or fetal complications in the latter group. This is attributable to strict observance of certain rules: personnel and facilities must be equal to the occasion; the patient must be prepared emotionally and physically; the patient must be a multipara at or near term with a vertex presenting and without evidence of disproportion; and all technical procedures should be carried out with strict asepsis. Oxytocin should be handled with special care as regards standardization and administration, and the obstetrician must be on constant, close attendance during the entire induction and labor. The patients form a highly selected group, not exceeding 20% of normal pregnancies. If this percentage is exceeded, a slight but definite increase in the number of complications must be anticipated, with indefensible poor results.

No stage of life is without hazard, and no physiological function of man without danger and without pathological aberration. The process of birth, albeit simple at times, is frequently complicated and perilous. Since the beginning of modern obstetrics, it has been the prime function and the idealistic aspiration of the obstetrician to diminish these hazards to an "irreducible minimum." A second important function has been the attempt to make birth as simple and as comfortable as possible for the modern woman. The accomplishment of this latter purpose has added certain additional and artificial procedures to normal birth. While procedures such as the use of "prophylactic forceps," episiotomy, analgesia, and anesthesia are associated with certain intrinsic dangers, good practice, sound judgment, and skill acquired from experience have reduced these hazards sufficiently that now the advantages surpass the disadvantages. As a result, they have become generally acceptable procedures. A recent artificial supplement to the practice of obstetrics has been the elective induction of labor. If it can be demonstrated that this too can be performed without increasing the hazards to either the mother or the baby, it may then be accepted and performed without shame and without temerity. Then it will not be observed with skepticism, censure, or disapproval.

Obviously, an approved status for elective induction of labor can be achieved only by electing this procedure with the wisest of judgment and performing it with the greatest of skill. The obstetrician must always be aware of the pitfalls which may be encountered. All complications must be avoided if the record is to be satisfactory and the procedure is to achieve approval and remain on the approved list.

The mere acknowledgment that complications can occur has prompted many critics to conclude that, since the practice of elective induction of labor is not wise for the tyro, it should not be contemplated by the experienced, or even discussed favorably by the teacher. Is it better, then, to reduce the practice of obstetrics to mediocity by avoidance of any procedure that is considered new or unproved, or is it better to accept a procedure

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From the Women's Division, Pennsylvania Hospital.

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which can be shown to be of value and to train ourselves to do it safely and well? This, of course, necessitates self-criticism and self-education. It requires the recognition of the inadequacies of any one operator or of any one institution by the selection of only those procedures of which one is capable and for which one is properly equipped. Is this expecting too much of the average obstetrician?

TABLE 1.—*Complications of Labor in 1,615 Deliveries*

	Spontaneous		Induction	
	No.	%	No.	%
Premature separation	6	0.5	1	0.3
Postpartum hemorrhage	10	0.8	3	0.9
Prolapse of the cord	3	0.2	0	0.0
Rupture of the uterus	0	0.0	0	0.0
Hypofibrinogenemia	1	0.1	0	0.0
Temperature morbidity	23	1.8	3	0.9

Dangers of Induction

Let us examine the dangers that are inherent to induction. The admission that they exist is not an admission that they must occur. Let us observe to what extent these dangers may be minimized and by what means they may be avoided. The most commonly mentioned or encountered maternal complications are patient anxiety, failure of induction, prolonged labor, tetanic contractions of uterus, rupture of uterus, premature separation, disturbance of placenta previa, postpartum hemorrhage, pelvic infection, and hypofibrinogenemia. The possible fetal complications are fetal distress, anoxemia, prolapse of cord, birth injuries, and prematurity.

The obstetrician who contemplates elective induction of labor must be aware of these potential complications in the same fashion that he must be aware of such possible complications of operative obstetrics as analgesia and anesthesia. He must be willing to accept the fact that, if complications do occur as a direct result of induction and as a direct result of his interference with natural processes, they are solely his responsibility and his alone. He must be willing to accept the fact that in the defense of any complications he must answer to his patients, his colleagues, and his conscience. No obstetrician with integrity can consider the practice of elective induction of labor unless he is confident that he can avoid these complications, that he is able to recognize them before they become serious, and that he is able to correct them before they become catastrophic. Obviously, this should represent the philosophy of the good obstetrician in all phases of his work. That satisfactory results can occur is suggested by our personal experience. This record, while small, is presented only as typical of the practice of the average obstetrician and is comparable to the results of a much larger series compiled by the entire staff of the Pennsylvania Hospital, the earlier portion of which has been previously published.[1] In the personal practice of my associate and myself during the past 46 months, 325 out of a total of 1,615 infants, or 20%, were delivered after elective induction of labor.

TABLE 2.—*Method of Delivery in 1,615 Cases*

	Onset of Labor			
	Spontaneous		Induction	
	No.	%	No.	%
Spontaneous	315	21.4	165	50.8
Low forceps	724	56.1	151	46.5
Mid forceps	43	3.3	4	1.2
Breech	53	4.1	3	0.9
Version	3	0.2	1	0.3
Cesarean	152	11.9	1	0.3

Table 1 demonstrates the complications of labor as they occurred in the induction group as compared to the control group comprised of all other deliveries in our private practice during the same period. We were unable to demonstrate any significant increase in the number of complications of pregnancy or delivery after elective induction of labor. Since those patients constituting the induction series represent a highly selected group, this result was not unexpected. It is unfair to indifferently criticize any complication which follows induction of labor. Instead, we must admit that complications can occur and do occur during any labor and then ascertain if they occur more frequently than anticipated after induction of labor.

TABLE 3.—*Fetal Complications in 1,615 Deliveries*

	Onset of Labor			
	Spontaneous		Induction	
	No.	%	No.	%
Prematurity	78	6.0	1	0.3
Still births	21	1.6	0	0.0
Neonatal deaths	22	1.7	1	0.3
Birth injuries	3	0.2	0	0.0
Fetal distress	13	1.0	2	0.6

The fact that elective induction of labor has little unpropitious effect upon the method of delivery is illustrated in table 2. Version in both groups was performed only for the delivery of a second twin. The cesarean section in the induction group was performed because of a premature separation of the placenta. The three breech deliveries, while not satisfying the criteria for true elective induction of labor, were done because of exigency of distance combined with a history of previous short labors.

The incidence of fetal complications in both groups is shown in table 3. The one neonatal death in the induction group resulted from erythroblastosis. The one premature infant weighed 5 lb. 4 oz. (2,381.36 Gm.) and was at term according to the menstrual history. The weight of this baby was comparable to the weights of the previous babies delivered of this mother. Therefore, in respect to the fetus, we were fortunate enough to be unable to demonstrate in our series any increase in fetal complications after elective induction of labor.

This experience has been presented only because it is representative of the results of an average obstetrician who is conservatively enthusiastic regarding induction of labor. However, this enthusiasm has been controlled by the conviction of the assayer that a 20% incidence represents about the maximum number of inductions that should be one in any group of patients. It has been observed that when this incidence is increased it is ssociated with a slight but definite increase in the number of complications with indefensible poor esults.

During recent years there has been a plethora of papers concerning the good results achieved by elective induction of labor. Unfortunately, there has been a paucity of discussion regarding the poor results which might be achieved. Two papers representing this aspect of the subject warrant consideration. In 1954 a paper read before the New York Obstetrical Society by Blaikley[2] presented the hazards of elective induction of labor. This author reported a perinatal mortality rate of 10.6% and a maternal mortality rate of 0.8%. Fortunately, a perusal of this paper reveals that these results did not follow elective induction of labor but were performed as a part of the treatment for severe obstetric complications. They were performed under unfavorable circumstances and by techniques that we cannot consider acceptable at the present time.

J. Robert Willson,[3] in a paper read before the American Association of Obstetricians and Gynecologists in 1952, presented the hazards of induction of labor as they occurred in his hospital. It must be considered that 72% of the results quoted in this paper followed inductions performed because of medical or obstetric indication and that only 28% were elective. Of the complications mentioned for the latter group, few were directly associated with the induction, and, as Willson intimates, one cannot be assured that these patients were selected wisely. He states, "It is the responsibility of the obstetric staff of each hospital to set up and enforce rules concerning induction of labor which should include not only the permissible reasons for the procedure but by whom and how it is to be done." With this attitude I am in complete accord. Therefore, no presentation concerned with the dangers of elective induction of labor is complete without inclusion of means by which these dangers may be avoided. Experience has shown that complications may be avoided only when a rigid set of rules is followed by each hospital, and, even more important, by each obstetrician.

Rules of Conduct

The rules of conduct followed in the management of our private patients are as follows: First, the presence of adequate experience, personnel, and physical facilities is essential. Second, the patient should be prepared emotionally and physically. It has been our practice not to consider elective induction of labor for those patients who do not completely and willingly accept the wisdom and the safety of the procedure. All patients, especially those with some question in their minds, are instructed in detail and are given a description of the anticipated procedure. This preparation often minimizes hours of mental stress for the patient who has been "semi-forced" into a situation which she fears or of which she may be uninformed. Ideally the candidate for elective induction of labor should be admitted to the hospital the night before the contemplated induction. This is done for exactly the same reasons that patients must be admitted for a period before the performance of elective surgery, permitting such additional safeguards as a recheck of the hemoglobin level and an elimination of such anesthetic hazards as respiratory infection. When this is neither physically nor economically possible, the same hazards must be eliminated by personal observation of the obstetrician.

Third, in the selection of patients, induction of labor should be limited to the multiparous patient at or near term with a vertex presenting without evidence of disproportion. The minimal acceptable pelvic findings, as determined by vaginal examination, should be an anterior soft cervix at least 3 to 4 cm. dilated and 60% effaced. The presenting part should be at station —1 or lower. While induction can be and is carried out successfully with less favorable indications, it is without question associated with an inexcusable increase in complications. Even though these complications may be infrequent or minimal, it is suggested that any alteration of the above criteria is an absolute contraindication to elective induction of labor.

Fourth, all technical procedures should be carried out under circumstances of surgical asepsis. Once patients have been selected according to the criteria mentioned above, amniotomy usually can be performed with little difficulty. A long Allis forceps is a satisfactory amniotome, minimizing the risk of injury to the presenting part. Since the vertex should be at station —1 or lower, there is little opportunity for prolapse of the cord unless the fetal head is displaced during the procedure. This may be avoided by having an assistant fix the fetal head by external abdominal pressure during the rupture of the membranes. Then the operator can, by controlling the presenting part between the vaginal and abdominal hands, allow slow but complete escape of the amniotic fluid. During the time necessary for the careful accomplishment of this act, increased tonus of the uterus usually occurs, fixing the presenting part in the pelvis. Then, and then only, may the vaginal hand be removed.

In the administration of oxytocin, the principal dangers are (1) unsuspected sensitivity of the uterus, (2) too rapid administration of the drug, and (3) improper dose. Therefore, certain precautions must be employed to prevent these complications. First, it is well for any institution to standardize the dilution of oxytocin. A satisfactory dilution seems to be one international unit of oxytocin to each 100 cc. of diluent. Tetanic contractions of the uterus may be avoided either by starting the intravenous drip slowly until the reaction of the uterus has been observed or by the use of double-bottle technique. We have not found it necessary to increase the rate of administration of oxytocin in excess of 25 drops per minute. Finally, it is necessary and essential to continue the administration of oxytocin throughout the delivery and after the third stage of labor in order to reduce the possibility of postpartum hemorrhage.

Last is attendance of the obstetrician. Since, under the circumstances outlined above, labor will be short, but especially since hazards can occur requiring prompt and expert attention, it behooves the obstetrician to be in constant and close attendance during the entire induction and labor. The physician who leaves the initiation or the observation of an induction to the nursing, intern, or resident staff is derelict in his duties.

Conclusions

Hazards may be associated with elective induction of labor. These hazards may be fetal or maternal, they may be emotional or physical, they may be mild or fatal; but they will occur unless meticulous attention, wisdom, and skill are utilized. These hazards may be minimized by the unfailing and continuous adoption and application of a set of regulations concerned with satisfactory facilities, proper preparation of the patient, proper selection of the patient, and proper technique.

The adoption of these regulations for our private practice has prevented any appreciable incidence of maternal or fetal complications during the accomplishment of 325 elective inductions of labor. The experience of my associate and I indicates that the conservatism necessary for the exercise of good judgment probably makes it unwise to increase the incidence of induction of labor over 20%. Enthusiasm of the obstetrician for a procedure which may appear to make the practice of obstetrics easier must be tempered and moderated by the exercise of good judgment at all times. Then, and then only, will it become a generally accepted and respected procedure.

811 Spruce St. (7).

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LEUKOPENIA ASSOCIATED WITH RISTOCETIN (SPONTIN) ADMINISTRATION

REPORT OF TWO CASES

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and
Vernon G. Ward, M.D., Madison, Wis.

Two male patients suffered from infection, one with evidence of septicemia and one with cervical abscess. The administration of ristocetin, a new antibiotic, was beneficial in both cases, but was followed by a fall in the total leukocyte count to 2,650 per cubic millimeter in one case and 1,040 in the other. The figures returned to normal after treatment with antibiotic was discontinued. The clinical and laboratory observations in the two cases are given in detail, and it is suggested that patients receiving ristocetin should be protected against the hazard of leukopenia by having leukocyte counts done every other day rather than only twice weekly.

Ristocetins are new antibiotic agents that have been receiving clinical evaluation recently. Isolation of these antibiotics was made from a new species of Nocardia, Nocardia lurida, which was first identified in a soil sample from the Garden of the Gods, Colorado Springs, Colo.[1] They were found to have antimicrobial activity against certain gram-positive organisms and mycobacteria. Several reports of laboratory and clinical studies have been made.[2]

Crystalline ristocetin B has been found to be three to four times as active as crystalline ristocetin A.[2c] The ristocetin used in this study (Spontin) consists of a mixture of approximately 70% of ristocetin A and 30% of ristocetin B.

The purpose of this paper is to report a case of cervical abscess and one of septicemia. Both pa-

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tients responded to ristocetin therapy, but both developed leukopenia. These represent two of six patients whom we have treated with this antibiotic.

Report of Cases

Case 1.—A 14-year-old male was admitted to University Hospitals on March 10, 1957, because of a mass which had been present for two weeks in the left lateral cervical area and in the left parotid area. Rather sudden enlargement and tenderness had occurred three days before admission, accompanied by low-grade fever without chills. There was no history of recent pharyngitis or tonsillitis, and there was no known history of allergy in the patient or in his family.

Examination at the time of admission revealed an oral temperature of 101 F (38.3 C), a pulse rate of 108 beats per minute, and a blood pressure of 135/80 mm. Hg. There was a mass 4 cm. in diameter below the left ear and the angle of the mandible. This mass was smooth, firm, tender, and relatively fixed. There was no redness, fluctuation, or increased heat. The left palatine tonsil was enlarged. No lymphadenopathy or splenomegaly was present.

This mass was believed to be inflammatory, probably a developing abscess with the portal of entry through the left tonsil. A biopsy of the area on March 19, 1957, revealed granulomatous inflammation characterized by muscle with streaks of fibrous tissue and numerous lymphocytes, large macrophages, and, questionably, giant cells. Culture of the nose and throat showed 15 colonies of hemolytic streptococci. Two blood cultures were negative. A culture taken from the left parotid duct revealed Streptococcus viridans and diphtheroids.

Because of the patient's continued fever to 101.2 (38.4 C) and the persistent pain and tenderness in the mass, ristocetin administration was begun on the ninth hospital day and was continued for 15 days. It was given intravenously daily in a dosage of 2,000 mg. by continuous infusion in 1,000 ml. of isotonic sodium chloride solution over an 8 to 12 hour period. After the first dose, the body temperature became normal and thereafter remained so. By the 10th day of treatment with ristocetin, there was no local tenderness and almost no swelling or induration. The drug seemed to be well tolerated except for mild, transient venospasm at the site of administration, which occurred once or twice, and a rather painful soft-tissue reaction on one occasion when inadvertent tissue extravasation occurred. This cleared within a few hours. Careful laboratory studies were made during the employment of this antibiotic, and the findings are shown in table 1 and figure 1.

On the 12th day of ristocetin administration it was noted that the leukocyte count had decreased to 5,500 from a level of 9,300 per cubic millimeter two days before. In the smear of peripheral blood there were 12% eosinophils. On the 14th day, 50 atypical lymphocytes were observed in the differential count and the platelets were decreased in number. The leukocyte count had fallen to 2,650 per cubic millimeter, with persistence of 12% eosinophils. Some hypochromia and anisocytosis was noted. These blood findings persisted for a week and, during the middle of this period, the number of eosinophils in the differential white blood cell count reached a maximum of 15%. During this time the patient showed continued improvement.

The blood picture gradually returned to normal, and two weeks after withdrawal of the drug the leukocyte count had increased to 5,600 per cubic millimeter, with an essentially normal differential blood cell count, including 4% eosinophils. Bone marrow examination two weeks after the therapy was stopped revealed only moderate erythroid hyperplasia. No detectable changes in renal or hepatic function developed, although the alkaline phosphatase level rose from 14.2 to 19.6 King-Armstrong units per 100 cc. during treatment and dropped to 14.1 units per 100 cc. two days after the drug was withdrawn.

No definite etiological agent was established for the abscess. Tonsillectomy was performed on April 9, 1957, for removal of the hypertrophic tonsils. Culture of the tonsillar tissue removed at operation was negative for fungi and bacteria. The patient was clinically well at the time of discharge on April 17, 38 days after admission. However, because of the possibility that he might have actinomycosis, penicillin and streptomycin were administered during his last five days in the hospital, and when he was discharged sulfadiazine administration was advised. A blood cell count on April 26, 1957, after his arrival home, showed a leukocyte count of 7,150 per cubic millimeter, with normal lymphocytes constituting 70% of the differential count.

Case 2.—A 64-year-old male was admitted to University Hospitals on Aug. 12, 1957. He complained of intermittent chills and fever during the 10 weeks prior to admission. There had been severe lethargy and sweating associated with the fever and chills. He had been hospitalized in May, 1957, and at that time had received penicillin for 10 days. Immediately after this he was essentially asymptomatic. After two weeks, the symptoms reappeared and treatment again brought about marked improvement, but after another period of two weeks, the symptoms recurred once more and the same treatment was given for two additional weeks. However, this remission was less satisfactory, and three days after treatment was discontinued he again experienced lethargy, chills, and fever to 105 F (40.5 C). Therapy with antibiotics was again begun, and some improvement occurred. At this point he was transferred to University Hospitals. During the 10 weeks before this admission, he had received trial therapy with tetracycline and oleandomycin (Sigmamycin), erythromycin, sulfamethoxypyridazine (Kynex), intravenously given oxytetracycline, and penicillin. There was no known personal history or family history of allergy.

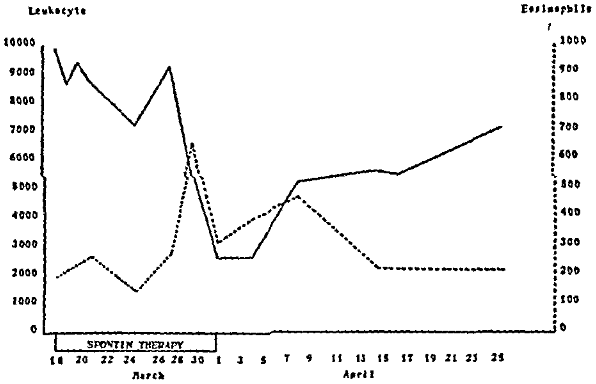

Fig. 1 (case 1).—Changes in leukocyte and total eosinophil counts during therapy with ristocetin (Spontin).

Examination at the time of admission revealed an acutely ill man. His blood pressure was 146/90 mm. Hg, pulse rate 108 per minute, respiration rate 20 per minute, and temperature 98.6 F (37 C). There were numerous petechiae on the upper portions of the arms. The lung fields were normal. There was no cardiomegaly, and the cardiac rhythm was regular, with a localized apical systolic murmur. The liver edge was palpable 4 cm. below the right costal margin, and the spleen edge was palpable 5 cm. below the costal margin on deep inspiration.

The electrocardiogram showed occasional premature ventricular contractions and nonspecific RS-T segment changes. Results of chest x-rays, intravenous pyelogram, upper gastrointestinal series, and barium enema were normal.

Laboratory studies obtained during the period of ristocetin therapy included frequent determinations of hemoglobin level, erythrocyte counts, nonprotein nitrogen concentration, alkaline phosphatase level, and serum bilirubin level. A sternal marrow aspiration done on Sept. 13, 1957, at the time of marked leukopenia, showed a hypocellular marrow with maturation arrest and eosinophilia. Although six serial blood cultures were positive for Staphylococcus pyogenes var. aureus between Aug. 13 and Aug. 15, only one further blood culture was positive, and this was on Aug. 18. Seven blood cultures taken between Aug. 26 and Sept. 23 were negative. The only significant laboratory data changes encountered during the use of ristocetin, other than those in the bone marrow, were those of the blood. The results are shown in table 2.

TABLE 1 (Case 1).—*Laboratory Data During Period of Administration of Ristocetin (Spontin)*

	March													April						
Date	11	12	13	14	15	16	18	19	20	21	25	28	30	1	3	4	8	15	17	25
Hemoglobin, Gm./100 cc.	12.0			11.9		11.7				12.2	11.7	11.9	11.4	11.7		10.8	12.8	10.8	12.0	12.9
Erythrocytes, million/cu. mm.	4.05			3.93		4.18					4.8	4.05	4.21				5.28	4.34	4.30	4.2
Leukocytes, thousand/cu. mm.	10.45	11.75	12.6	9.0	9.9	9.2	9.05	8.7	9.4	8.8	7.25	9.3	5.5	2.65		2.65	5.2	5.6	5.5	7.15
Segmented cells, %	73			65			61			57	56	58	52	29		5	35	49	46	18
Band cells, %	2			5			2			7	9	12	1	0		3	0	4	5	4
Eosinophils, %	2			1			2			3	2	3	12	12		15	9	4	4	3
Total eosinophils, %	209			90			109			204	145	279	660	318		398	468	224	220	215
Basophils, %											3			1		2				
Lymphocytes, %	10			22			25			19	20	22	24	51		65	55	36	39	75
Monocytes, %	18			7			10			14	10	5	11	7		10	1	7	6	
Urinalysis				Normal											Occasional Cast Seen				Normal	
Platelets, thousands/cu. mm.	523														247	300				
Serum nonprotein nitrogen				30						27	25	30		38		28				
Serum glutamic-pyruvic transaminase, units										22	21	15				22				
Sulfobromophthalein, %					1										0					
Hanger's test					–						–			–		–				
Thymol turbidity, units												2.8			2.8					
Serum alkaline phosphatase, units/100 cc.										14.2	11.5	19.6		17.8		14.1				
Total serum bilirubin, mg./100 cc.					0.4					0.7	0.2	0.5		0.4		0.3				
Direct bilirubin, mg./100 cc.					0.1					0.1	0.1	0.1		0.1		0.1				
Prothrombin time, %																	82			
Antistreptolysin-O titer		1:1,280															1:640			
Mumps complement fixation			1:32									1:32	1:32			1:16				
Heterophil																–				

TABLE 2 (Case 2).—*Laboratory Data During Therapy in Patient with Staphylococcic Septicemia*

	No Antibiotics		Penicillin, 8/15-8/30; Erythromycin, 8/18-8/28; Novobiocin, 8/28-8/30		Ristocetin 8/30-9/11			Novobiocin, 9/11-9/14		Penicillin and Streptomycin, 9/14-9/24								No Antibiotics		
	8/13	14	15	30	9/5	9	10	11	12	14	15	16	17	18	19	20	21	23	25	26
Hemoglobin, Gm./100 cc.	13.0	12.7		10.8										10.3	10.8	11.2				
Erythrocytes, million/cu. mm.	4.28											2.78								
Leukocytes, thousand/cu. mm.	9.3	21.95	12.2	14.9	11.55	10.7			2.2	1.04	1.47	2.1	3.27	4.10	4.40	6.6	6.9	9.9	12.3	7.9
Segmented cells, %	77	64	71	71	62	72			14	2	2	9	7	12	25	31	47	66	68	61
Band cells, %	4	30	18	12	13	5			5		-	1	5	21	16	23	10	12.5	15	2
Eosinophils, %	1	0	0	6	1	1			27	27	12	20	15	19	16	11	12	4	4	8
Lymphocytes, %	18	5	2	8	16	15			51	64	86	54	60	41	38	29	11	16	10	25
Monocytes, %	5	1	6	3	8	7			3	7	0	15	13	4	5	6	3	1.5	3	4
Basophils, %	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0
Platelets, thousand/cu. mm.		170							142											
Total eosinophils										397		471	419	550	625	525		640	537	574

His course in the hospital was marked by high fever on Aug. 13, 14, and 15. After Staph. aureus had been isolated and reported sensitive to numerous antibiotics, aqueous penicillin therapy was begun in a dosage of 500,000 units every four hours. This was on Aug. 15. On Aug. 1 erythromycin, 500 mg. four times daily, was added to the regimen. Fever decreased but continued to be moderately high, and, on Aug. 20, the dosage of penicillin was increased to 3 million units given intramuscularly every four hours. There was some clinical improvement, but fever persisted. On Aug. 28, the erythromycin therapy was stopped and novobiocin sodium therapy was begun in a dosage of 0.5 Gm. given orally every four hours. On the same day the schedule of penicillin therapy was changed so that the patient was receiving 12 million units intravenously and 8 million units intramuscularly daily.

Novobiocin therapy was discontinued on Aug. 30 because of nausea. Penicillin was withdrawn also on the same day. At this time, ristocetin administration was begun intravenously in the dosage of 1.5 Gm. in 500 ml. of 5% dextrose in water every 12 hours. On Sept. 4, the dosage of ristocetin was increased to 2 Gm. given every 12 hours. Although the fever was not brought entirely under control, the suppreson of fever was the best obtained up to that time. On ept. 10, diarrhea appeared, and, because of this, ristocetin as withdrawn on Sept. 11, after having been administered or 12 days, and intravenous administration of sodium novobiocin (Cathomycin) was begun. The diarrhea ceased.

On Sept. 12, leukopenia was first noted. The intravenous dministration of sodium novobiocin was discontinued on ept. 14, to avoid any possible aggravation of the leukopenia. From Sept. 14 to Sept. 24, the patient received procaine penicillin, 600,000 units intramuscularly, twice daily and treptomycin, 0.5 Gm. intramuscularly, twice daily. This was given largely for protection during the stage of rather marked leukopenia.

At the time of discharge on Sept. 29, he was asymptomatic and afebrile. The leukopenia was no longer present. His fever curve during hospitalization is shown in figure 2. He remained asymptomatic at home and had a 10-lb. (4.5-kg.) gain in weight. When readmitted to the hospital on Nov. 17, he again was running a low-grade fever ranging from 99.2 to 100.8 F (37.3 to 38.2 C). Blood cultures at this time remained negative.

Comment

The ristocetins show considerable promise as antibiotic agents.[3] Especially good results have been reported in pneumococcic pneumonia and in enterococcic infections.[2b] The maximal in vitro activity has been against strains of Diplococcus pneumoniae, and no significant effect was found against gram-negative organisms in vitro.[2b]

Resistance to ristocetin develops slowly in vitro and in a step-like manner.[4] Cultures with natural resistance were not found in studies by Grundy and others.[4] There is essentially complete cross-resistance between ristocetin A and ristocetin B.[2a] Romansky and others,[2b] however, found no cross-resistance with penicillin, streptomycin, tetracycline, chloramphenicol, erythromycin, or polymyxin B sulfate.

Since ristocetin is not absorbed when administered orally and produces pain when administered intramuscularly, the intravenous route is necessarily the one of choice.[2b] This will limit routine usage to some extent. The drug, however, may prove to be useful in infections caused by organisms resistant to other antimicrobial agents. It is postulated that organisms resistant to ristocetin may emerge more slowly, since the necessity for administration by the intravenous route will make usage of the drug less frequent.

Toxic reactions to ristocetin therapy have been considered to be relatively few.[5] To date, hepatic and renal toxicity have not been reported.[2b] Romansky and others [2b] found one case of phlebitis as the only side-reaction in 16 patients treated with the drug.

The best method of administration would appear to be that of giving the drug over periods of one hour twice daily, as was done in the patient in case 2. Two of our patients, including that in case 1, received the drug by continuous drip over an 8 to 12 hour period. A severe phlebitis developed in one of these.

We recognize that the patient in case 2 had received a variety of therapeutic agents prior to the administration of ristocetin. Ristocetin was given for 12 days as the sole antibiotic agent, and novobiocin was added less than 24 hours before the leukopenia appeared.

The present cases are reported not only to emphasize the utility of ristocetin, but also to show the possibility of untoward effects from what is considered to be a relatively nontoxic drug. It is suggested that leukocyte counts be obtained every other day, rather than only twice weekly, while patients are receiving the drug. The significance of the eosinophilia is unknown.

Summary

Two patients developed leukopenia and eosinophilia after the administration of ristocetin (Spontin). This drug, however, shows promise as an additional agent in the therapeutic armamentarium against certain organisms, particularly strains of Diplococcus pneumoniae and the group of enterococci. Leukocyte counts should be done frequently during the administration of ristocetin.

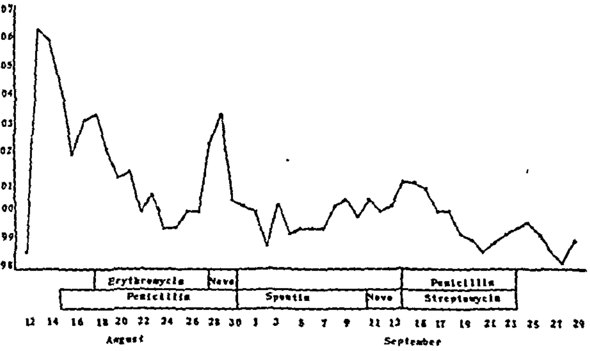

Fig. 2 (case 2).—Course of temperature during therapy in patient with staphylococcic septicemia.

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The ristocetin used *in this study was supplied as Spontin* by Abbott Laboratories, North Chicago, Ill.

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3. References 1 and 2*b*.

4. References 1 and 2*a*.

5. References 2*b* and *c*.

DURATION OF SEROIMMUNITY AFTER POLIOMYELITIS VACCINATION

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The persistence of the effects of immunization against poliomyelitis was studied in 139 children three years after primary inoculation and two years after booster inoculation with inactivated poliomyelitis vaccine. The criterion was the titer of neutralizing antibodies for the three immunological types of poliomyelitis virus, as measured colorimetrically by the protection of monkey-kidney cell suspensions from the metabolic inhibitory influence of the virus. School-age children who had received primary vaccination during the nationwide field trial of 1954 showed an average loss of only threefold to fourfold in antibody titer during the two-year period after secondary immunization and still had high levels indicative of protection. The levels of protection found appeared to be independent of the extent of primary stimulation. The younger children had markedly lower levels of antibody after the booster injection, but the mean loss of antibodies was of the same order of magnitude in the three groups. The degree of immunity and extent of loss during the two-year interval closely duplicated the values reported by others for patients convalescing from the disease itself.

Since the demonstration of the efficacy of inactivated poliomyelitis vaccine,[1] efforts to improve its antigenicity and dosage schedule have continued. One of the most important questions remaining to be answered concerns the duration of immunity after vaccination. The effect and importance of a booster inoculation after primary immunization has been well documented.[2] It follows, therefore, that persistence of antibodies should be measured temporally from the completion of a vaccination schedule which has included a booster inoculation 7 to 12 months after primary immunization.

Salk has described the duration of neutralizing antibodies after booster inoculations for periods of one and one-half to two and one-half years [3] and more recently [4] has studied the degree of persistence of antibodies over a three-and-one-half-year period in children given their booster doses at 7 or 11 months after the primary. In addition to demonstrating good retention of antibody levels, he has emphasized the importance of adequate primary stimulation on the persistence of antibodies. The present paper describes studies with three groups of children who have been followed serologically for a period of three years, during which time they were given a primary vaccination and booster one year later.

Method of Study

Two of the groups included in the study were school children in Kent and St. Clair counties, Michigan, who participated in the poliomyelitis vaccine field trial of 1954. Blood samples had been taken before and after the primary vaccination in 1954 and before and after the booster inoculation one year later in 1955. The antibody response to these inoculations has been previously described.[2b] It should be stated that the vaccine used for primary immunization in Kent County was antigenically superior to that used in St. Clair County. Sixty-three of the children in Kent County and 18 in St. Clair County were available for further testing, and blood samples were taken once again, in 1957, two years after the booster inoculation.

The third group consisted of younger children, ranging in age from 2 months to 5 years at the time of their first injection in 1954, who were studied to determine the response of infants and preschool children to poliomyelitis vaccine.[5] Since part of the above study involved an investigation of dosage schedules, some of the children had received three injections of vaccine for their primary immunization, and others received either two or one inoculation. All were injected with a booster six months after the first injection. Fifty-eight of these children were available for blood samples again in 1957, one and one-half to two years after the booster.

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Testing for Serum Antibodies

Since earlier serums had been retained in this laboratory (unless exhausted by previous testing) it was possible to retest each postbooster serum specimen from 1955 together with its 1957 counterpart. In addition to the testing of each pair on the same day, all specimens (preprimary and postprimary 1954 and prebooster and postbooster 1955 and 1957) from some children were retested for a comparison with previous results.

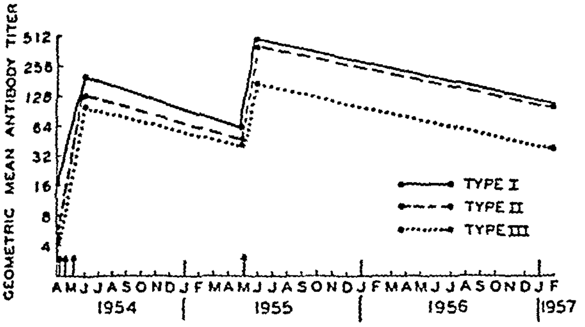

Fig. 1.—Duration of poliomyelitis antibodies in 63 school children (Kent County, Mich.) after primary and secondary inoculation of inactivated vaccine.

Neutralizing antibodies for the three immunological types of poliomyelitis virus were assayed by the color test in disposable plastic panels described by Melnick and Opton[6] which measures the protection of monkey-kidney cell suspensions from the metabolic inhibitory influence of poliomyelitis virus. A comparison of antibody titers obtained by this method with previous titers in tests employing monkey kidney tissue showed a close correlation and provided a basis for the acceptance of previous results of tests on earlier serums which were not all repeated with the 1955-1957 pairs.

Results

Figure 1 presents the geometric mean antibody titers of the 63 children in Kent County over the period of three years. The initial response to primary vaccination followed by a decline during the subsequent year and the booster response to secondary vaccination are in keeping with previous reports. It is of interest that the relative position of the three types remains the same for the entire period. The mean titers for each type of antibody show a fourfold decrease over the two-year period after the booster, and the actual serologic status therefore was approximately the same as that immediately after the primary vaccination three years before. Many of the individual 1957 titers, however, remained unchanged from their 1955 level, as seen in table 1.

Table 1.—*Comparison of Individual 1957 and 1955 Titers*

	Same or Twofold Decrease, %	Fourfold Decrease, %	Greater than Fourfold Decrease, %
Type I	31	51	18
Type II	29	46	25
Type III	41	32	27

Thirteen of the subjects had shown no demonstrable antibodies to any type of virus before primary vaccination in 1954, and their antibodies can therefore be considered to be stimulated entirely by artificial immunization. Their individual titers after booster and two years later are indicated in figure 2. A calculation of the means shows that the decrease in antibody titer for types I and II over the two-year period is again fourfold. The type III titers showed a greater loss, which may be associated with the fact that the titers were lower after the booster than were the other two types. However, in all but one individual, artificially stimulated antibodies were still demonstrable against all three types in these persons.

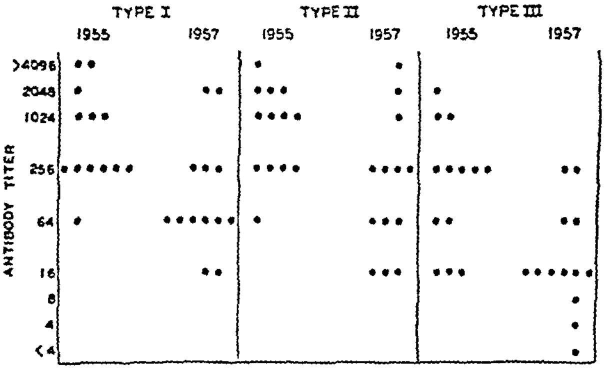

Fig. 2.—Poliomyelitis antibody titers of vaccinated children two weeks after and two years after booster. There was no antibody to any type before primary vaccination in 1954.

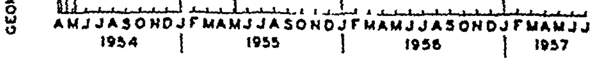

Fig. 3.—Duration of poliomyelitis antibodies in 18 school children (St. Clair County, Mich.) after primary and secondary inoculation of inactivated vaccine.

The duration of antibodies in school children of St. Clair County is shown in figure 3. As in the case of the Kent County data, the geometric mean titers for the three-year period are presented. As mentioned in a previous publication,[2b] the response to primary immunization in this county was quite poor when compared with other areas where better vaccines had been used. However, the effect of booster injections one year later was so marked that the serologic status of the subjects after this injection was practically the same as in the children from Kent County (fig. 1). The interval between the taking of the 1955 postbooster specimen and the 1957 blood samples was 25 months for these children, and, again, as in the Kent County group, the loss in mean antibody titer was only threefold to fourfold. The titers, therefore, are higher than they were three years before and immediately after primary immunization. Only one child was found to be lacking in demonstrable antibodies to all three types.

TABLE 2.—*Geometric Mean Antibody Titers*

Age at Time of Primary	No. of Children	1955, Type I	II	III	1957, Type I	II	III
Infants	27	11	58	24	2.4	11	<2
Preschool	31	38	205	90	10	35	10

Since the subjects in Kent and St. Clair counties had been in the first, second, or third grades of school at the time of their primary immunization, it was of interest to study the persistence of seroimmunity in younger children. Consequently, blood specimens were obtained in March, 1957, from 58 subjects who had been infants and preschool children at the time of receiving their primary immunization in 1954 or early 1955. In these children the booster inoculations were given six months after the beginning of the immunization schedule. The serologic response to these vaccinations has been previously reported.[5]

Although different groups of these children had received primary immunizations ranging from one to three doses with different vaccines, the response to booster stimulation had been rather uniform. For this reason, and since the size of each group was small, primary dosage was disregarded and the geometric mean titers of the 1957 and 1955 postbooster specimens of the 27 infants are compared with those of the 31 preschool children. Table 2 indicates these results, and it will be seen that although the mean titers of the infants were lower than those of the older children, the rate of decline was the same (from fourfold to sixfold) except for the type III mean of the infants, which became undemonstrable. In fact, antibodies could no longer be detected two years later in many of the infants. This may be due in part to the fact that their titers were much lower in 1955 at the beginning of the postbooster period. Of the 27 children, 16, 8, and 21 fell into this category for types I, II, and III respectively.

Comment

Knowledge of the duration of immunity after vaccination against poliomyelitis is extremely important at the present time, two to three years after the inoculation of large numbers of children in the United States. Since serum antibodies are accepted as a significant index of resistance to the paralytic disease, the present study provides factual information of the seroimmunological status of representative children vaccinated three years before. The maintenance of identical antibody titers in many individuals and a decrease of only threefold to fourfold in the mean titers for most subjects over the two-year period after booster inoculation argues well for the persistence of immunity in properly vaccinated individuals. In fact, some decrease in titer is to be expected even after clinical infection.

In a recent publication Lennette[7] described the appearance, development, and persistence of neutralizing antibodies in patients with poliomyelitis over a period of two years after natural infection. Thirty-five of the paralytic cases which had been followed for two years had been confirmed by the isolation and identification of specific poliomyelitis virus (type I, 32 cases; type II, 1; and type III, 2). Since the neutralizing antibody titers were determined at various intervals after the onset of disease, it is possible to make a direct comparison of his results with those obtained in the present study. In Lennette's study, the geometric mean of the highest titers immediately after paralytic disease was 512 and two years afterwards was 122 as compared with a mean of 461 in the type I titers of the children of Kent County in our study two weeks after booster in 1955 and a mean of 102 two years later.

TABLE 3.—*Evidence of Subclinical Infection Indicated by Rise in Antibody Titer in One Type* of Virus in Six Children Who Received Booster Injections in 1955*

1955, Type I	II	III	1957, Type I	II	III
256	64	<8	64	16	16
<4	<4	16	<4	64	<4
<4	16	256	64	4	<4
<4	16	<4	64	<4	<4
<4	8	8	256	4	<4
<4	<4	4	<4	16	<4

* Boldface numbers indicate type in which rise occurred.

During the two years after onset of virus-confirmed paralytic disease, mean titers of homologous neutralizing antibody decreased exactly fourfold from the highest titers observed. In fact, the original level and subsequent drop in geometric mean titer of Lennette's human subjects is almost identical with the corresponding levels of the type I mean titer in the vaccinated study group. In view of such a close correlation with actual convalescence from paralytic disease, it would seem that inactivated vaccines have indeed been effective.

The significance of the duration of serum antibodies in the vaccinated school-age subjects is increased by the fact that the results in children from St. Clair County were very similar to those in Kent County, and in the third group the infants and preschool children, although starting with lower titers after booster, showed the same pattern. It should be reemphasized that the children in this group not only were younger but received their booster inoculations only six months after the first primary injection rather than one full year later as with the other groups.

In discussing the persistence of antibody in the blood after vaccination, Salk [2a] has brought out the fact that it may merely be of academic interest anyway since "in the presence of a sufficiently hyperreactive state, immunity to paralysis may well continue even after the level of circulating antibody declines to minimal or nonmeasurable levels." This phenomenon is illustrated by several observations in the present study (table 3).

Six different children had obviously been exposed to natural infection without developing clinical illness during the two-year period after the booster. Although their postbooster antibodies to the specific type of virus were not detectable, their next serum specimens showed a rise in titer to that type while their antibodies to the other two types decreased in the usual pattern (fig. 1). Five of the six were among the infant and preschool study group, and two were in the same household. These instances of higher antibody titer after subclinical infection were, of course, omitted from the calculation of mean titers in studying duration of antibody.

Summary

The duration of serum antibodies against poliomyelitis in 139 children was determined by testing their serums three years after primary vaccination and two years after booster inoculation. Two groups of school-age children who had received primary vaccination during the nationwide field trial of 1954 showed an average loss of only threefold to fourfold in antibody titer during the two-year period after secondary immunization and still had high levels indicative of protection. These levels appeared to be regardless of the extent of primary stimulation.

A third group who had been infants and preschool children at the time of primary vaccination had markedly lower levels of antibodies after the booster injection, but the mean loss of antibodies was of the same order of magnitude as that of older children.

The mean levels of postbooster antibodies in vaccinated school children and the fold losses during the subsequent two years were almost identical with those reported by Lennette in patients convalescent from paralytic disease which had been confirmed by virus isolation.

109 Observatory St. (Dr. Brown).

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HAS INJECTION TREATMENT OF VARICOSE VEINS BECOME OBSOLETE?

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Sclerotherapy for varicose veins has not become obsolete. It is indicated for superficial veins that do not communicate with deeper veins, including varices remaining after radical surgery, recurrences of moderate degree, spider veins, and those veins with paper-thin covering. It is contraindicated in huge superficial veins with wide open communications to deeper veins, in allergic conditions and acute infections, in cases of marked arteriosclerosis or thromboangiitis, and in a number of other conditions. Improved understanding of the basis of sclerotherapy has led to improved techniques for administering it. The essential purpose is not to produce a bulky thrombus but to bring the walls of the vein into apposition and to induce fusion of the opposed layers of the intima. This is accomplished by the air-block foam techniqûe using sodium tetradecyl sulfate as here described. Air embolism has not been observed once in a composite series of 135,964 injections, and sclerotherapy has emerged as a safe and effective measure with a definite place in the management of varicose veins.

Has injection treatment of varicose veins become obsolete? The answer is in the affirmative if one speaks of sclerotherapy solely in terms of its application in the treatment of varicose veins, as practiced during the 20's and 30's. The answer is in the negative if one considers injection therapy as an ancillary method subordinated to surgical eradication. A flat "yes" or "no" does not answer the question adequately.

Radical advocates of injection therapy completely neglect the obvious advantages of surgical eradication, and radical proponents of surgery have to ignore superficial and minute veins. In both extremes a disservice is done to the patient, who eventually is played into the hands of charlatans. At present a middle-of-the-road policy appears to be the attitude of the profession.

Indications for Sclerotherapy

What are the indications for sclerotherapy? 1. Superficial veins without communication to deeper veins, including varices remaining after radical surgery, recurrences of moderate degree, spider veins, and those veins with paper-thin covering, should be injected. Excision and suture are inferior to sclerotherapy from the cosmetic standpoint. 2. Poor risk patients or those who refuse surgery become candidates for sclerotherapy, unless such presenting pathology as eczema and ulceration can be controlled by other conservative means. 3. Varicose veins during pregnancy are best managed by elastic support and possibly by administration of estrone and progesterone. Sclerotherapy has been recommended by a number of physicians. I inject such veins infrequently, because they usually decrease in size or disappear spontaneously after conclusion of pregnancy.

Contraindications Against Sclerotherapy

What are the contraindications against sclerotherapy? 1. Huge superficial veins with wide open communications to deeper veins are not amenable to sclerotherapy. The injection of a large volume of sclerosant may be dangerous; then, too, recanalization almost always occurs. 2. Allergic conditions and acute infections are contraindications. Acute superficial phlebitis should not be treated with injections. Although this technique is widely practiced in Europe, I do not see the wisdom in combating an infectious thrombophlebitis by a superimposed chemically caused thrombus. The underlying superficial phlebitis may become aggravated and may be driven into deep channels. 3. Extreme caution has to be exercised in the presence of underlying arterial disease, such as marked peripheral arteriosclerosis or thrombangiitis obliterans (Buerger's disease). However, Raynaud's disease is not a contraindication, according to my personal experience. 4. Varicosities caused by abdominal and pelvic tumors should not be managed with sclerotherapy, unless the tumor has been removed. 5. Such uncontrolled systemic diseases as diabetes, toxic hyperthyroidism, tuberculosis, asthma, neoplasms, sepsis, blood dyscrasia, and acute respiratory or skin diseases are contraindications. 6. Uncooperative patients who cannot be depended on to follow through a course of injections and cannot carry out instructions in the application of compression bandages should not be subjected to sclerotherapy. 7. Sclerotherapy should not be undertaken in the last trimester of pregnancy.

Notable changes have taken place in injection therapy of varicose veins during the last decade. More potent sclerosants obviated the necessity for injecting large volumes of irritant solutions. This

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reduced the postinjection morbidity considerably. Such complications as deep phlebitis are completely avoided, and postinjection mortality has been eliminated.

If one is not able to control complications, one will become frustrated by this type of therapy and probably will be inclined to condemn it. The problem is not solved by simply injecting the sclerosing agent into the varix, letting nature take its course, and waiting for the results. With such a philosophy one invites failure from the start.

Progress in Therapy

The credit for detecting a powerful and almost ideal sclerosing agent goes to the late Dr. Reiner.[1] In 1946 he introduced sodium tetradecyl sulfate (sodium Sotradecol). It is the sodium sulfate salt of a branch chain hydrocarbon alcohol and was selected from a large series of compounds because of maximal thrombogenic activity with a low sensitization index.

In 1944 the observation was made that introduction of a small air bubble into the vein before the injection of the sclerosing agent enhances the thrombogenic activity of any sclerosant.[2] There have been other advantages referred to in an earlier presentation.[2]

What about air embolism hazard? There is none when small amounts of air, not exceeding 8 cc., enter the saphenous system. A composite series of 135,964 injections did not show any incidence of air embolism.[3] This figure has been multiplied many times in unrecorded series without untoward incidence. From experimental study in dogs, Richardson and co-workers [4] estimated that 480 cc. of air injected within 20 to 30 seconds is required to kill a person weighing 60 kg.

It has been shown that tetradecyl sulfate foam has thrombogenic activity four times greater than the solution. In an experimental study, thrombi were shown to be produced by foam from 0.05 cc. of tetradecyl sulfate solution.[5] Another important advantage of the "airblock technique," as this method has been termed, is to demonstrate unmistakably whether the needle point is inside or outside the vein. If a clearly visible "balloon sign" (paravenous emphysema) appears, the physician is warned to change the location of the needle point before attempting the injection.

Further progress was made by the development of a new concept of the mechanism of action of sclerotherapy.[6] The earlier theory, proposing that the chemically caused thrombus caused artificial obliteration of varicose veins, has been proved fallacious. The opposite occurs, since nature's tendency is to recanalize.

Of the various stages in thrombus formation, only one is desirable from the therapeutic standpoint: the retracting of the primary blood clot from the vein wall. This forms lateral sinuses, which subsequently become resurfaced by endothelium, leading to new venous channels. The thrombus may then either soften centrally, probably because of autolytic fibrinolysis, or be resorbed by the process of phagocytosis. The blood may then tunnel its way through the thrombus. Even the formation of a vascular granulation tissue may give rise to recanalization by transformation of capillaries into new veins. Phlebolith formation, a late stage in the development of a thrombus, is undesirable.

The chemically caused thrombus serves as an aid in the adhesion of apposing traumatized intima producing venous obstruction by intima concretion. Therefore, the chemically caused thrombus has to be kept as small as possible. This is achieved by immediate, effective, and continuous compression. If in spite of this postinjection management a large thrombus should form, it should be removed through a stab incision during subsequent office visits.

To appreciate this process one should compare primary vein obliteration (by intima concretion) and secondary vein obliteration (by thrombus formation) with primary and secondary healing of surgical skin wounds. In primary wound healing we have exact coaptation of wound edges without formation of granulation tissue. In primary vein obliteration we have intima apposition with fusion and a minimal thrombus. In secondary wound healing there is poor adaptation of wound edges and formation of a great deal of granulation tissue. In secondary vein obliteration there is poor intima apposition, large thrombus formation, and, later on, transformation of the thrombus into granulation tissue, which then may form the basis for recanalization.

Is it contradictory to first produce a thrombus and then remove it? Clinical experience has shown that clot evacuation assists nature's healing efforts. We need only a fraction of thrombotic material, which nature gives us so abundantly.

Method of Treatment

The basic steps of the airblock foam technique are as follows: The injections are made with the leg dependent. One-half cubic centimeter of a 3% tetradecyl sulfate solution is aspirated into the syringe. The plunger is then further retracted about 0.5 cc. The syringe and contents are shaken until foam is formed. Then the plunger is again retracted about 0.25 cc., in order to create the airblock above the foam. The needle is inserted into the vein, and the insertion is verified by visible blood flow into the syringe. Then the air bubble is injected while one watches for the "balloon sign." If it does not occur, one can be sure that the needle is properly inside the vein. With one motion the layer of foam and also 0.1 cc. of tetradecyl sulfate solution are injected. The remainder of the solution is discarded.

In an alternate procedure a vial of tetradecyl sulfate solution is shaken for about 30 seconds to produce foam. The foam is then aspirated into the syringe. It becomes more dense at lower temperatures. At 70 F, 1 cc. of foam will turn into about 0.05 cc. of solution, and at 40 F it will turn into about 0.1 cc. of solution after three hours. It has been shown that the number of "takes" is higher with use of the three-layer technique (air-foam solution) than with the two-layer method (air-foam). The former method produces 91.3% takes, the latter only 54.7%.

I recommend using the "air bubble" in both techniques. The reason is that tetradecyl sulfate molecules are concentrated *in the walls of the* bubbles. Even with the decreased amount of tetradecyl sulfate solution the danger of injection slough is real if the foam is placed outside the vein. Inside the vein the bubbles constantly bombard the intima. As soon as the peripheral bubbles go into solution, new bubbles are formed and exert a continuous corroding effect upon the intima. In view of this, the increased effectiveness of the foam technique becomes quite evident, in comparison with the method whereby the injected sclerosing solution is immediately highly diluted by venous blood and washed away.

After the injection, the leg is brought into the horizontal plane and a gauze pad placed over the injection site. Then a blood pressure cuff is applied over the pad and inflated to 10 mm. Hg above the patient's diastolic pressure and kept in place for five minutes. After removal of the cuff, the vein stem above and below the puncture site is compressed with adhesive foam rubber. It is incorrect to place the compression sponge over the puncture site alone. The whole vein sector has to be included. Then a snug compression bandage is applied from the metatarsus up to the knee and, if necessary, higher. The bandage improves the hemodynamics of the leg, decreasing the intravenous pressure by shunting the blood away from the superficial veins to the deep ones; thus it keeps superficial veins free from blood. Local and whole-leg compression have to be done simultaneously to assure good results. Either one alone is not sufficient. The bandage stays in place day and night. The patient is advised to move around freely during the daytime and to keep working.

After two or three days the bandage is removed by the physician. Thrombi and trapped blood are evacuated by stab incisions with use of a no. 11 blade. This procedure has to be repeated during subsequent visits, since the tendency to excessive thrombus formation is great. New injections are given. The vein and leg compression has to be reinstituted immediately. Excessive postinjection phlebitis is successfully managed by a short course with phenylbutazone (Butazolidin).

It is not necessary to extend the injection treatment over a long period of time. The injections can be given every two or three days. A rapid conclusion of the treatment is desirable. After a test dose several veins, up to five, can be injected at each visit without discomfort. Bandages have to be kep in place for at least three weeks, because this is the time required for formation of nonvascular sca tissue.[7]

Tetradecyl sulfate, a detergent, may rarely precipitate an allergic reaction, as may most chemicals. However, the incidence is negligible, particularly if one uses minute doses. Nevertheless, parenterally given antihistaminics, corticosteroids, and vasodepressors should be immediately available.

Conclusions

The importance of sclerotherapy has been reduced as surgical techniques have been perfected. However, it has not been eliminated, as some writers try to imply. With the availability of the new sclerosing agent, sodium tetradecyl sulfate (sodium Sotradecol); the application of the air foam techniques; the use of minute doses of it (not exceeding 0.2 cc.); continued compression therapy; and removal of excessive thrombus formation through stab incision in order to obtain vein obliteration by intima concretion, sclerotherapy has emerged as a safe and effective auxiliary therapeutic measure in the management of varicose veins.

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The sodium tetradecyl sulfate used in this study was supplied as Sotradecol by Maltbie Laboratories Division, Wallace & Tierman, Inc., Belleville, N. J.

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MANAGEMENT OF EPILEPSY

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The treatment of seizures is predominantly a medical problem. A definitive evaluation of surgical treatment is not yet possible, and surgery is absolutely indicated only in those patients in whom the attacks seem to be due to some intracranial mass such as a brain tumor, abscess, or subdural hematoma. The most valuable therapeutic agents at present available are the anticonvulsants. The grand mal and focal types of seizures are most readily controlled, the petit mal somewhat less so, while the psychomotor types are the most resistant. Nine drugs are here compared as to dosage, field of usefulness, and important side-effects. With proper medical treatment, attention to general hygiene, and observance of certain restrictions, many patients can live normal, happy, productive lives. Physicians should lend their aid in securing enlightened legislation that will improve the occupational status and protect the legal rights of citizens who have been afflicted with seizures.

Regardless of traditional teaching, the present day neurologist considers epilepsy merely as a synonym for seizures rather than as a specific disease entity. From the etiological standpoint it has long been customary to distinguish between two broad categories of seizures: 1. In the symptomatic group seizures are clinical manifestations of some underlying intracranial or generalized toxic or metabolic pathological condition such as a brain tumor, brain abscess, subdural hematoma, intracranial trauma, cerebral vascular lesion, hypoglycemia, and alcoholism, to mention only a few of many causes. 2. In the so-called idiopathic or essential epileptic group, careful intensive study fails to reveal any adequate explanation for the patient's attacks. In respect to this latter group, many misconceptions exist, most of them fallacious, fortunately, concerning hereditary stigma, mental deterioration, and a specific abnormal personality type. These have been a source of much anxiety, not only to the laity but even to some physicians, and a detriment to successful treatment. In order to permit a rational therapeutic approach, it would seem preferable to consider those patients who experience seizures for which no adequate basis can be demonstrated as suffering from "seizures of undetermined cause" due to some as yet unknown pathophysiological disturbance too subtle to be detected by presently available methods of investigation. Acceptance of this concept allows the physician to pursue the same diagnostic and therapeutic principles in every patient with seizures.

Cause and Therapy

The physician's first responsibility is to determine whether or not the patient is suffering from some underlying disorder which is causing the seizures, the alleviation of which would eliminate or reduce their frequency. A thorough diagnostic survey is therefore indicated. The minimal studies essential in every patient who has seizures are (1) detailed history with special attention to character and frequency of attacks, association with other symptoms, precipitating factors, and familial incidence; (2) complete physical examination; (3) comprehensive neurological survey; (4) ophthalmological examination with particular attention to visual acuity, fundus, and visual fields; (5) roentgenograms of skull and chest; (6) minimal laboratory studies—complete blood cell count, urinalysis, blood sugar, blood urea nitrogen, and blood serology; (7) lumbar puncture—unless contraindications are present, careful pressure determinations, usually no Queckenstedt test, and complete laboratory examination of cerebrospinal fluid; (8) electroencephalogram—not absolutely necessary but desirable; may be helpful where history is inadequate, when there is doubt as to whether the patient is suffering from true seizures, and in revealing focal cortical lesions; may be negative in patients who have definite seizures; (9) further laboratory and roentgenographic studies, depending on preliminary findings; and (10) pneumoencephalography, ventriculography, and angiography in selected cases. These procedures are potentially dangerous and should not be ordered routinely. Neurological consultation is always indicated before they are performed.

If the basic studies reveal any intracranial or general disease, appropriate medical or surgical therapy directed toward correction of the underlying pathology should be instituted. Unfortunately, in most cases treatment of any causative disorder alone rarely suffices to control the seizures. Further symptomatic treatment is therefore usually necessary regardless of whether or not any cause for their occurrence can be demonstrated.

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The treatment of seizures is, in most cases, predominantly a medical problem. Surgical treatment is absolutely indicated only in those in whom the attacks appear to be due to some intracranial mass lesion such as a brain tumor, abscess, or subdural hematoma. In a limited number of patients who have failed to respond satisfactorily to prolonged and adequate medical therapy and in whom a definite limited focal lesion can be demonstrated by electroencephalography and electrocorticography, surgical extirpation of the so-called epileptogenic focus has been carried out. While some investigators have reported encouraging results in the form of a significant reduction in the frequency of seizures, even though supplemental medication is often still required, a definitive evaluation of surgical treatment is not yet possible. It should be regarded as still being in the experimental stage and should be considered only as a last resort in cases intractable to medical therapy.

The most valuable therapeutic agents at present available are the anticonvulsants or so-called suppressive drugs. The ideal anticonvulsant, which in a minimal dosage would suppress seizures of any type in every case without toxic or undesirable side-effects, does not yet exist. However, a number of useful and therapeutically potent drugs are available. New compounds are being introduced by the pharmaceutical industry in such profusion that even the neurologist is at a loss to keep abreast of the innovations. Initially many are reported to be of superior value in one or another type of seizure. Extensive clinical trial, however, often fails to substantiate the initial enthusiasm and discloses such dangerous toxic side-effects that the drug is soon discarded. Other drugs become useful adjuvants in cases where older and longer-tested drugs are not completely effective. This pharmaceutic interest is most encouraging and sustains hope that eventually better and ultimately the ideal anticonvulsant will become available.

Drug therapy must be individualized in each case. Medicaments effective in one type of seizure may be of no value or even detrimental in another. The particular dosage in any individual case is dependent on the frequency and character of the attacks. Often various combinations of the available anticonvulsants are necessary to obtain maximum therapeutic benefit. A variable amount of trial and error is usually unavoidable. Modifications are often necessary. Medication must be continued indefinitely and often for life although, rarely, it may be cautiously and slowly reduced or withdrawn. Consultation with a neurologist is helpful in attaining the maximum benefit.

Types of Seizures

There are a number of types of seizures, varying to a greater or lesser extent from each other in their clinical and electroencephalographic features. For clinical purposes all may be grouped into the four major categories of grand mal, focal or Jacksonian petit mal, and psychomotor types. The important characteristic differentiating features of each are so well known that only a brief summary is necessary. Details may be found in any standard textbook of neurology.

Grand mal, or major, seizures are characterized chiefly by loss of consciousness, generalized tonic and clonic movements with or without tongue biting, loss of sphincter control, preliminary aura and postictal confusion, headache, and somnolence. In focal, or Jacksonian, seizures there is a progressive spread of clonic jerkings beginning in the face or part of an extremity and gradually spreading to involve to a greater or lesser extent one side of the body, without loss of consciousness. The focal seizure may progress into a major seizure, with loss of consciousness. Petit mal attacks are characterized by momentary lapses of consciousness, with or without isolated myoclonic jerkings. Psychomotor attacks are more variable in their clinical characteristics. The minor forms may resemble petit mal attacks but last longer, up to a few minutes, show more marked muscular movements such as smacking of the lips, arching and twisting of the trunk or extremities, and incoherence of speech. There is a more extensive clouding of consciousness with a subsequent amnesia for the attack. Rarely, the patient may exhibit behavior which, while purposeful, is bizarre or incongruous in the setting in which it occurs. On recovery, there is complete amnesia for what happened during the attack. Determination of the type of seizures occurring in each patient is necessary in order to select the medicament most likely to be helpful. If, as is often the case, several types of seizures occur in the same patient, more than one drug will be necessary.

There is some variability in the ease with which the various types of seizures can be controlled. In general, the grand mal and focal types are most readily controlled, the petit mal type somewhat less so, while the psychomotor types are the most resistant. The table lists those drugs which in our and others' experience have been found most useful. All have been available long enough to permit evaluation. The type of seizure against which each drug is most effective, its dose range, and the chief toxic and side-effects are also noted. Other drugs, too recently introduced to permit adequate evaluation, have been omitted. Extensive clinical trial alone will determine whether they are to become permanent useful therapeutic agents. While drug therapy is an important factor in the management of the patient with seizures, equal emphasis must be placed on general hygienic measures—both physical and psychological. Fortunately no rigorous deviation from the normal pattern of living is necssary, but adherence to a few simple principles will do much to enable the patient to remain attack-ree and content.

General Hygienic Measures

The patient should be encouraged to avoid excesses of any type. He should obtain the average amount of sleep. No special diet is necessary. Any that is well balanced, nutritious, and palatable will suffice. No restriction of fluids is required. Regular elimination is important. Generally, alcohol in any form tends to precipitate seizures, and its ingestion is therefore to be avoided. Some patients have, however, found that they are able to take an occasional social drink without harm. Provided the patient is aware of the risk and is willing to assume the responsibility, he may be permitted to follow his own inclinations in respect to drinking, but excess must always be avoided. A reasonable amount of exercise in the form of walking, bowling, golf, tennis, and gardening are not only permissible but advisable. Some patients have found that they have been able to go horseback riding and swimming without harm. They should, however, always be accompanied. Sports with a high potential of head injury such as boxing and football are, of course, to be avoided. Continuation at one's usual occupation unless the latter involves unusual hazards is desirable. Many epileptics are able to enjoy an active successful career. Unfortunately, there are still some employers who will discharge an employee if he has had a single attack while on the job and will refuse to hire an employee if he is known to have seizures. The employer's hand is often forced by archaic workmen's compensation regulations. The American Neurological Association, the American Academy of Neurology, and the American League Against Epilepsy have committees to combat discrimination against epileptics, and they are constantly striving to modify existing prejudices and regulations which prevent the patients with seizures from pursuing gainful employment.

While the ideal aim of treatment is to enable the patient to lead as near normal a life as possible, some restrictions are unavoidable. One of the most troublesome is the prohibition of driving an automobile. The potential dangers both to the patient and to the public if a seizure should occur while the patient is driving are too apparent to require comment. In most states driving licenses are revoked if it is known that the patient has seizures. Even though the attacks are well controlled and none have occurred for a period of many years, the patient cannot legally regain his right to drive. This induces considerable hardship. It is encouraging that, gradually, some states are recognizing that in selected cases where the seizures are well controlled and the patient continues faithfully under medical supervision, permitting the patient to drive is a reasonably safe privilege. It is to be hoped that with further education more states will adopt a more realistic attitude towards the seizure patients' driving privileges.

Antiquated notions, no longer justified but still embodied in various laws, further restrict the personal liberty of the seizure patient. In many states, by law, they are forbidden to marry. The neurologist is frequently asked about the advisability of marriage. No generalization is possible; each case must be considered individually. The patient is asked to have his prospective spouse accompany him on one of his visits. The nature of the attacks and what is necessary to control them is explained. Usually the question arises regarding the probability of any children of the union having seizures. This is answered by stating that even though both

Drugs Useful in Treatment of Patients with Seizures

Drug	Dose Available, Grain	Dose, Gm, Daily Range	Type of Seizure in Which Effective	Important Toxic or Side-effects	Comment
Phenobarbital	0 03 to 0 1	0 1 0 4	All types, but chiefly effective in grand mal and focal	Drowsiness, dermatitis	..
Diphenylhydantoin sodium (Dilantin)	0 03 to 0 1	0 2-0 6	Grand mal, focal, and psychomotor	Gastric upsets, nausea, vomiting, unsteady gait, ataxia, nystagmus, dermatitis, gum hypertrophy	Less hypnotic effect than phenobarbital
Methoin (Mesantoin)	0 1	0 3 1	Grand mal, focal, and psychomotor	Drowsiness, ataxia, rash, anemia, agranulocytosis, pancytopenia	Monthly blood counts advisable
Primidone (Mysoline)	250 mg	1-1.5	Grand mal, focal, and psychomotor	Nausea, vomiting, dizziness, somnolence, minor psychiatric disturbances	...
Trimethadione (Tridione)	0 15 and 0 3	0 3-2.7	Petit mal only	Rash, light sensitivity, aplastic anemia, nephrosis, decreased polynuclear cells in blood	...
Paramethadione (Paradione)	0 15 and 0 3	0 3 2 7	Petit mal only	Same as for trimethadione	Possibly less toxic than trimethadione
Phensuximide (Milontin)	0 5	0 75-3 0	Petit mal	Nausea, vomiting, dizziness, drowsiness	Value not definitely established
Phenacemide (Phenurone)	0 3 and 0 5	1 3	Psychomotor chiefly	Severe psychiatric symptoms, liver damage, aplastic anemia, leukopenia	Extremely dangerous drug. Recommended only in rare cases
Potassium or sodium bromide	1	1-6	Grand mal and focal chiefly	Skin rash, drowsiness, toxic psychosis	Rarely used due to toxic side-effects

parents have never had seizures, approximately 1 out of every 200 children will have an attack some time during his life. If one parent suffers from seizures, the odds are reduced so that approximately 1 out of every 40 will be affected, whereas if both parents have seizures approximately 1 out of 10 of the progeny will also have attacks. The prospective spouses are advised that these are merely statistical figures and no one can predict whether their particular children will be seizure free or afflicted. It is to be hoped that in the future further sensible modifications of the laws will be enacted so that the patient with seizures may assume as near normal a place in the world as possible. The recently published book by Barrow and Fabing[1] contains much useful information regarding the patient with seizures from the standpoint of his legal rights and limitations. The physician will find this work most helpful. An ideal legislative code for seizure patients is included and it is hoped that all physicians will lend their aid in helping procure enactment of more enlightened legislation.

Even though it is realized that our present methods for treating patients with seizures are inperfect, the results obtained with present-day methods are encouraging. The recent report of Merritt[2] is typical. He found that in 319 patients seizures were controlled in 48% and improved in 37%, while only 15% were not benefited. With increasingly sensitive diagnostic methods and the intense interest in the development of newer and more effective suppressive drugs, it is to be hoped that in the not too distant future even better results will be obtainable. If we as physicians can assist them in securing more equitable legal rights, many seizure patients will be able to live normal, happy, productive lives differing little at all from those enjoyed by their unafflicted fellow citizens.

133 S. 36th St. (4).

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PREPARING PARENTS FOR PARENTHOOD

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Physicians who minister to the family in the home have long practiced preparation for parenthood and for physiological childbirth without adopting any formal methods of instruction. In many situations today, however, more systematic effort is necessary. The physician's instructions are supplemented by informative pamphlets, and a program of classes is arranged to include fathers as well as mothers. Motion pictures are included in the course. Data from 2,600 deliveries show that the more intelligent patients are much more likely to attend such classes. The incidence of spontaneous deliveries has been higher, and the amounts of general anesthetics used have been lower, in the patients who accept these opportunities for prenatal instruction.

Certain advantages are self-evident in a preparation for childbirth program based on the physiological approach to the conduct of labor. The length of labor is shorter and in most instances it seems that the patient is less tense, the cervix seems to dilate much more easily, and even in some cases where the length of labor is not actually shortened, it seems shorter because the patient is able to tolerate her labor, understands the birth processes, and is not frightened by every contraction that occurs. When labor is conducted as close to the physiological processes as possible, only a very small amount of anesthesia is necessary. The use of local anesthesia and regional anesthesia does lessen the use of general anesthetics, and if they are used the anesthesia is in such small quantities that the respiration of the babies is not impaired; the babies cry immediately upon birth and are definitely less narcotized or not narcotized at all, as compared to the deeply anesthetized and narcotized patients that I saw as a resident physician in the 1930's. After physiological childbirth, the patient makes a more rapid recovery, moves about more freely, and is anxious to get out of bed and assume the care of

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her child. The main advantages of physiological childbirth and the participation of the father in all its phases, not only in the attendance at classes but also playing an active part in the labor and delivery of the child, is the cementing of the ties of parenthood, the entire family being one unit.

One of the arguments against the physiological childbirth program is that "natural childbirth"[1] is a regression to primitive obstetrics, and the other mistaken notion is that no analgesic drugs are used. Some others argue that an occasional patient may be alarmed at the amount of knowledge that she has obtained. It is an obvious fact that some people are not emotionally constituted for medical instruction or education. This type of patient should not participate in a formal program.

It has been suggested by some that the preparation for physiological childbirth borders on the hypnotic. Hypnosis, we agree, has no place in the management of the obstetric patient, with but few exceptions. We have found that an understanding patient with a certain level of intelligence is helped by confidence and understanding, whether it is in the treatment of an illness, getting ready for an operation, or having a baby.

It is said that the formal program of instruction is time consuming and not practical. In those centers where the programs are instituted and handled by lectures and instruction given by trained personnel, there is no time loss to the practicing physician. Those doctors who, in their private practice groups, give instructions at certain specific times, find that their office hours run much more smoothly because they do not have the numerous questions that usually plague the practitioner who does not avail himself of instruction classes. Patients who refuse or cannot attend formal lectures are invariably helped by reading a manual on childbirth and parenthood. It has been argued that certain men are not emotionally equipped to be with their wives during labor or during their delivery, and this is so. The husband and wife must want and be capable of participation; otherwise, the whole program is for nought.

Many family physicians have been and are practicing preparation for parenthood and physiological childbirth without any particular form of formal instructions. The family physician who ministers to the whole family often takes care of his pregnant patient at home, in familiar surroundings, with the help of the family and friends. In this setting, a small amount of anesthesia and analgesia is used, and the child, by necessity, is made to participate in a rooming-in technique, which is now being utilized in some hospitals. Actually, the management of the patients in the preparation of parents for parenthood regimens is only a return to physiological and homey principles, just referred to above. For those births which are not physiological or normal, which fortunately have always been in the minority, the above principles do not obtain, and the principle of surgical procedures must take their place.

Thoms and Goodrich,[2] in 1949, reported on their experiences with the trained childbirth program which Dr. Thoms had instituted at the Yale Medical College Hospital in June, 1947, when a special program of instructions for expectant mothers and a rooming-in program were instituted. After a visit to this clinic, mothers' classes at Jefferson Medical College Hospital were started in September, 1949; rooming-in had been obligatory in our maternity wards. Facilities for this were made available by Dr. T. Montgomery, the director, in September, 1947. It is interesting to note that with the obligatory rooming-in program, during the 10 years in which the program has been instituted, more than 10,000 babies have been cared for in this manner. Although we have had several epidemics of diarrhea and skin infections in the private and semiprivate maternity facilities of our hospital, where rooming-in is optional, very few cases of infectious diarrhea or skin infections have occurred in any of the babies who have roomed in with their mothers on the ward service!

Plan of Instruction

Instructions for expectant parents vary somewhat in plan and in the number of hours devoted to the course of instructions, whether in institutions or in doctors' offices. The basic principles are nevertheless the same. The number of hours devoted to the course are from six to eight. The plan of the Jefferson prenatal classes for expectant mothers and fathers is as follows:

Introduction.—A pamphlet is given to the parents which stresses that normal pregnancy is a healthy, happy time. Childbearing is a natural process; it is the supreme physical function of womanhood; and no other event confers so much in deep-seated, abiding contentment. Health and happiness in pregnancy are dependent greatly upon proper guidance by a competent physician. Intelligent women of today often want to know the "whys and wherefores" of prenatal care and labor more than it is possible for the physician in his limited time to give them. It is with this purpose of supplementing the physician's instructions that prenatal classes have been organized at Jefferson Hospital.

Objectives.—The objectives of the program are to supplement the physician's prenatal instructions to the patient; to dispel and diminish the fears and anxieties caused by superstitions and ignorance of the processes involved in pregnancy and labor, thereby helping the patient to relax at these times; and to give information concerning the care of newborn babies.

Time Allotment.—Time allotment for instruction includes four classes a month, held every Thursday at 1 p. m. for mothers, one class held the last Wednesday of each month at 7:30 p. m. for mothers and fathers, and one class held to show relevant motion pictures once a month at 7 p. m. This date is usually the Wednesday night after the second day lecture and is for fathers and mothers. There are six classes in all. The instructor is a nurse, and her teaching methods include lectures, discussions, demonstrations, and assignments. Her teaching material consists of anatomic charts, birth atlas, blackboard, mimeographed material, and visual aids.

Outline of Classes.—The first class is entitled "Female Anatomy and Physiology—Growth of the Fetus." This is a basic review of cell division, reproduction organs and their functions, menstruation, ovulation, fertilization, sex determination, products of conception, stages of growth of fetus, physiology of fetus, diagnosis of pregnancy, danger signs during pregnancy, physiological changes in pregnancy, and signs and symptoms at end of pregnancy. The second class is "Labor and Delivery—Relaxation Exercises." This includes definition of labor, types of labor, why duration of labor varies, stages of labor, labor contractions, evident signs and symptoms as the onset of labor approaches, hospital routine, "natural childbirth," and "relaxation exercises."

The third class is entitled "Diet—Practice of Relaxation Exercises—Clothes for Mother," and consists of instruction and practice of exercises and suggestions for diet (seven basic food groups) and clothing. The fourth class is called "Basic Layette—Baby Bath—Formula Making Demonstration," and concerns the basic layette and its requirements, care of layette, discussion of bath, and discussion of formula making.

In the fifth class the motion picture "Education for Childbirth" is shown. This consists of three films: (1) "Prenatal Care," 25 minutes; (2) "Labor and Delivery," 20 minutes; and (3) "Normal Birth," 15 minutes. The sixth and last class is entitled "Brief Outline of Development of Infant—Breast Feeding—Rooming-in—Tour of the Maternity Department." Here the nurse discusses the outline of development of the infant, advantages and disadvantages of breast feeding and rooming-in, preparation for baby's arrival, natural childbirth, and admission to hospital. Then there is a tour of the maternity department, including private and semi-private rooms, private nursery, and delivery and labor rooms. Several well-known textbooks written by doctors for the laity are recommended for collateral reading.

Comment

It has been observed that only a few of the total number of women who are delivered at any one particular hospital avail themselves of instruction classes. At the Jefferson Medical College Hospital, out of a total of approximately 2,600 deliveries a year, 1,300 are ward patients. Of these ward patients, only about 10% attend classes, while about 25% of private patients attend the classes. DeWatteville,[3] of Geneva, reporting his experience with psychoprophylactic methods of training, found that approximately 25% of their patients availed themselves of their instruction program. Their teaching program takes eight hours. DeWatteville found that the incidence in the use of obstetric analgesia and anesthesia after instruction dropped considerably from 1954 to 1956. Chloroform "a la reine" dropped from 80% to 9.4%. The use of meperidine (Demerol) dropped from 41% to 24.5%. The number of patients who delivered without analgesia went up from 2.5% in 1954 to 35.5% in 1956.

Of the 546 patients reported on by Thoms and Goodrich,[2] 109 (27.5%) attended no classes whatsoever. Only 97 (17.8%) attended all six classes. The remainder of the patients attended varying numbers of classes. When the mother's reaction to her experience was assessed, it was found that 21.3% of the mothers attending no classes had poor reactions to their deliveries, while of those mothers attending all classes, only 5.2% had a reaction to labor and delivery which was classified as poor.

In the experience of the men on the staff of the Jefferson Medical College Hospital, it has been established that it is a definite help to have patients attend the mothers' classes whether or not they intend to avail themselves of the complete physiological childbirth program. It has been found that if those who wish to go through the natural childbirth program do require anesthesia or sedation of any type, it is usually a smaller amount than was required formerly. At the perineal stage, local infiltration or pudendal block, combined with small amounts of trichloroethylene (Trilene) or nitrous oxide and oxygen by inhalation, are effective during the delivery.

In the year from Aug. 1, 1956, to Sept. 1, 1957, at Jefferson the total number of private cases delivered was 1,363; the number of ward cases was 1,300. There were 881 spontaneous deliveries on the private service, or 64.6%, and 1,128 on the ward service, or 86.8%.

To the education of the public has been attributed the longevity of the people of the United States in general and the eradication of many diseases, because the progress of medicine has encompassed the participation of the patients with the doctor in their better care. In particular, education programs, both for the profession and the laity, have done the same in reducing maternal and infant mortality and improving infant and mother care. Birth being the supreme achievement of the female, physiologically and psychologically, it should never become an assembly line production.

1621 Spruce St. (3).

The film "Education for Childbirth" may be obtained from the Medical Arts Productions, 414 Mason St., San Francisco.

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INFECTIONS OF VERTEBRAL INTERSPACES AFTER OPERATIONS ON INTERVERTEBRAL DISKS

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and
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Symptoms of infection in the intervertebral space were recognized in 11 of a series of patients who had undergone surgical removal of a nucleus pulposus. In four patients, the symptoms appeared within four or five days after operation; in two, the symptoms were delayed as long as 10 weeks. The pain was sometimes excruciating and out of all proportion to the physical signs. Fever was not a prominent sign, and the only general laboratory test of significance in this connection was the sedimentation rate. The most important information was gained by aspiration of material from the involved interspace; this yielded material from which the causative organism and its sensitivity to antibiotics could be determined. Progression of the inflammatory process within the interspace to bony fusion appeared inevitable. The process became visible in roentgenograms in the course of a few weeks, and fusion occurred within six months to two years. Such osseous union was observed in all patients followed longer than five months. It was not the result of simple curettage of the intervertebral space, for it rarely, if ever, took place unless infection was present. Three case histories illustrate the type of symptoms encountered. The most important treatment was found to be adequate immobilization of the vertebral column by means of a plaster-of-paris cast or rigid brace.

Infection of the intervertebral space after surgical removal of the nucleus pulposus occurs infrequently. Ford and Key[1] estimated its incidence to be less than 1%. Perusal of the literature and review of our own experience show that it may be difficult to recognize postoperative infections of disk spaces, the diagnosis frequently being delayed for several weeks until typical roentgenographic changes appear.

The bizarre symptoms associated with infection of the intervertebral space and the important biological aftereffects of inflammation within this space have prompted this report, which is based on a detailed study of 11 patients encountered in recent years. This figure does not represent the total number of such patients recorded in the files of the Mayo Clinic. It would be difficult to determine the exact incidence of this complication among patients who have undergone operations on intervertebral disks at our institution, because of the self-limiting nature of the process and because this complication is not always catalogued in the cross index. Also, many such infections probably heal without recognition.

Diagnosis

The diagnosis of this condition may be difficult for several reasons. First, symptoms may not appear immediately after operation. The patient may not have any postoperative complaints other than those attendant on any spinal operation. The second reason for the obscurity of these infections of the interspace is the lack of fever. The majority of

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our patients showed no increase in temperature at any stage of the process. A third deterrent to diagnosis is the bizarre nature of the patient's complaints, which may be so strange that, when they are coupled with the atypical physical findings, the physician occasionally may consider the entire process to be functional.

The onset of symptoms from postoperative infection of the disk space may be delayed as long as 10 weeks. Of our 11 patients, 2 noted the onset of symptoms 10 weeks after operation, whereas 4 patients noted onset of pain after 3 weeks, 1 after 10 days, and 4 within 4 or 5 days.

Pain.—The pain associated with postoperative infection of the interspace is its most characteristic symptom. Pain in the lumbar region is severe and at times excruciating, the usual doses of narcotics having little or no effect. Three of our patients stated they had not obtained relief from the parenteral administration of morphine. Prior to referral to the clinic, one patient had received intravenous injections of procaine, as well as paravertebral injections of procaine and a solution containing 0.75% ammonium sulfate, 0.75% benzyl alcohol, and 0.48% sodium chloride (Dolamin), without relief. All but one of our patients described the pain as a "spasm in the back."

All patients stated that they were never free of pain but that motion of the back or lower extremities, even jarring of the bed, would initiate an excruciating spasm of the lumbar musculature that, by contrast, made the constant pain appear less severe. One of our patients, who had spasms of pain every few minutes during the examination, was unable to speak during the acute episode but ashed his teeth, clenched his fists, and sweated rofusely. After each spasm of pain, he would lie ck exhausted and await the next attack.

Although the pain is centered in the lumbar egion, most of our patients noted referral of pain laterally around the flanks into the lower abdominal quadrants, groin, or testes. One patient had undergone exploration of the abdomen prior to recognition of the true pathological changes. Actual referral along the course of the sciatic nerve was not common. One patient complained of "fulness" in both lower extremities. Strain, such as that produced by coughing or sneezing, could initiate a spasm of pain in the same manner as did motion of the back or lower extremities.

Fever.—As already indicated, fever is not a prominent sign of postoperative infection of the interspace. Only 4 of our 11 patients had temperatures of 100 F (37.8 C) or more during the active infection. Only one patient had fever suggestive of an acute septic process; in this instance, a daily spike of temperature from 102 to 104 F (38.9 to 40.0 C) was recorded on the 7th to the 12th postoperative day and was coincident with a superficial infection of the incision that broke through and drained on the 12th day after operation, at which time the temperature promptly returned to normal. Symptoms related to infection of the disk space did not appear in this patient until eight weeks later, and fever was not evident at that time.

Use of antibiotics in the immediate postoperative period did not appear to be a factor in either masking or preventing infection in these patients. Three patients received penicillin or streptomycin immediately after operation, and one of these was the patient just mentioned. Four patients did not receive antibiotics; the remaining four patients, who were operated on elsewhere, did not know whether antibiotic drugs had been given. The lack of fever in this group of patients is in contrast to the situation reported on by Ghormley and associates,[2] whose patients had severe fever in association with nonsurgical hematogenous infection of the interspace. The explanation for this difference is not clear.

Physical Findings.—The severity of symptoms caused by infection of the interspace appears to be out of all proportion to the objective physical signs. Four of our patients, at one time or another during the course of their disease, were thought to be exaggerating the pain. The presence of functional illness frequently is suspected, as already noted.

Physical examination of the patient is often difficult because of acute lumbar pain engendered by motion. Spasm of the erector spinae muscles is prominent. While lying in bed, most of our patients were most comfortable with the hips and knees flexed. Two patients were most comfortable in a sitting position. When the patients attempted to stand upright, lumbar lordosis frequently occurred because of spasm of the quadratus lumborum muscles. Raising the straightened leg may or may not produce pain in a sciatic distribution. Sometimes it was difficult to evaluate neurological signs because of previous protrusion of the nucleus pulposus and because of the recent operation. However, none of the patients demonstrated evidence of progressive involvement of the nervous system.

Roentgenographic Findings.—The most significant diagnostic criterion of postoperative infection of the intervertebral space is seen on roentgenograms of the lumbar portion of the spinal column taken in the lateral projection. The earliest roentgenographic sign is indistinctness or "fuzziness" of the ordinarily dense white epiphysial plates adjacent to the involved interspace. The interspace gradually becomes narrower as the bodies of the vertebrae approach each other. In addition to collapse of the space, proliferation of new bone occurs, appearing first around the periphery of the joint, most notably on the anterolateral aspects of the centrum as seen on the roentgenogram taken in the oblique projection. These beaks of new bone, which look like the osteophytes in osteoarthritis, eventually coalesce; as the center of the space fills with new bone, firm bony intercorporeal fusion finally occurs.

The time necessary before roentgenograms show erosion of the epiphysial plates in humans is not precisely known. In our patients, the earliest roentgenogram was made eight weeks after operation, and this revealed evidence of destruction. In spondylitis in the dog, erosion of the epiphysial plates has been noted four weeks after operation.[3]

Progression of the inflammatory process within the interspace to bony fusion appears to be almost inevitable, although the rate at which this is accomplished is extremely variable. Osseous union has formed in all but two of our patients, and these two have been followed up for only three and five months respectively. Fusion occurs within six months to two years. It should be emphasized that this fusion of the vertebral bodies is not the result of simple curettage of the intervertebral space, since fusion rarely, if ever, takes place unless infection is present.

Laboratory Findings.—The only general laboratory examination of significance in indicating the presence of infection within the intervertebral space is the erythrocytic sedimentation rate. Admittedly, this test indicates a wide spectrum of pathological activity, and the rate is even increased for several weeks by surgical procedures alone. However, if it remains increased after several months, one should suspect an infection of the interspace, in the presence of other suggestive findings or symptoms. All nine of our patients on whom this test was done had greatly increased rates. After roentgenographic evidence of fusion appeared, the sedimentation rates returned to normal.

The number of leukocytes in the blood is of little value in determining bacterial activity in infection of the interspace; only two of our patients had counts as high as 8,000 to 10,000 cells per cubic millimeter. Examination of the cerebrospinal fluid was not helpful in making the diagnosis in any of our patients. Occasionally, a tuberculin skin test should be done and brucellar or typhoid agglutinins should be measured to determine the presence of a coincident infection that might have been overlooked prior to operation on the disk.

The most important information can be obtained by aspiration of material from the involved interspace. The causative organism and its sensitivity to antibiotics can be determined, and more effective treatment can be given. Although this procedure is desirable, it is probably not compulsory, since healing almost always occurs after prolonged immobilization of the back by means of a cast. When a needle is inserted into the interspace, one might think, judging from the severity of the symptoms, that pus would gush forth under great pressure; however, this is not true. Micrococcus pyogenes was obtained on culture in three patients, whereas growth was not obtained in three patients, probably due to previously administered antibiotics.

Treatment

The treatment of infection of the intervertebral space depends primarily on proper immobilization of the spinal column. This is best accomplished by application of a well-molded plaster-of-paris cast, although a rigid Taylor brace occasionally suffices. In addition to the cast, rest in bed for a few weeks also may be necessary. As a rule, pain is greatly relieved by adequate immobilization, and the cast should be worn until pain subsides. After removal of the cast, a fabric back support with rigid stays or a Taylor brace can be worn until roentgenographic evidence of fusion appears. All activity involving extensive motion of the spinal column should be discontinued until fusion is sound.

In addition to spinal immobilization, the use of antibiotics probably is indicated in every case of infection of the interspace. When the organism responsible for the infection is known and when its sensitivity to these drugs has been determined, more effective medication can be instituted. If the organism has not been identified, a broad-spectrum antibiotic should be used.

Whether open drainage of the interspace should be established is a matter of opinion. Three of our patients were reexplored; one experienced dramatic relief of pain, but the other two did not. Only chronic granulation tissue and necrotic fragments of disk were found in these three patients, and little or no drainage was noted after reopening of the space and insertion of a rubber drain.

Some surgeons have recommended posterior fusion for postoperative infection of the disk space. We do not consider this necessary, since intercorporeal fusion is almost inevitable if adequate immobilization is maintained. Those patients with whom we are familiar who have undergone posterior fusion for infection of the interspace also finally had osseous union across the space. In all likelihood, this union would have occurred in the same length of time had immobilization in plaster been prolonged.

Report of Representative Cases

CASE 1.—A 30-year-old housewife came to the clinic in December, 1955, because of intermittent episodes of lumbar pain referred to the right thigh of three years' duration. Examination disclosed limited motion in the lumbar region of the spinal column, tenderness to percussion over the right sacroiliac region, and painful straight-leg raising on the right. Roentgenograms revealed slight narrowing of the lumbosacral interspace and minimal "reverse spondylolisthesis" (fig. 1A). There was no neurological deficit. Myelography disclosed a defect at the level of the fifth lumbar interspace.

Operation revealed a bulging annulus fibrosus at the lumbosacral level, and disk material was removed from this interspace. The patient was dismissed from the hospital on the ninth postoperative day, although she had noted no relief of the pain in the back and right leg. Except for a temperature of 101.5 F (38.6 C) on the day after operation, she gave no evidence of sepsis. When seen again in February, 1956, she continued to complain of pain. Because her symptoms were thought to be functional, the only treatment recommended at that time was oral administration of chlorpromazine (Thorazine).

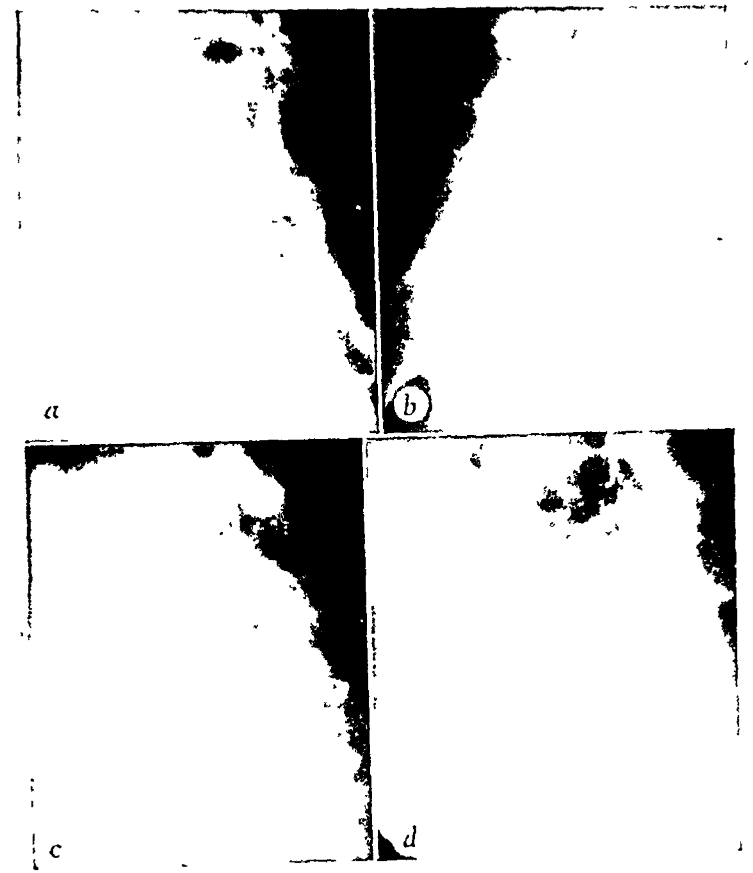

Fig. 1 (case 1).—*A*, appearance of lumbosacral joint in December, 1955, showing slight narrowing of lumbosacral interspace. Epiphysial plates are clearly defined. *B*, appearance in April, 1956, 13 weeks after operation. Column of oil shows no defect. Epiphysial plates are indistinct and "fuzzy." Interspace has narrowed. *C*, appearance in June, 1956. Note progressive narrowing of lumbosacral interspace and proliferation of new bone across interspace. *D*, appearance in January, 1957. Intercorporeal fusion is complete. Patient had no pain at this time, and sedimentation rate was normal.

She returned in April, 1956, because the pain had increased in severity; it was characterized by severe spasm of the lumbar musculature and was aggravated by motion of the spinal column. Examination revealed spasm of the erector spinae, a list to the left, painful straight-leg raising on the right, and a diminished Achilles tendon reflex on the right. Study of the cerebrospinal fluid and myelography were unrevealing. A roentgenogram demonstrated an inflammatory process at the lumbosacral interspace, with narrowing of the space and erosion of the epiphysial plates characteristic of infection of the disk space (fig. 1*B*). An unsuccessful attempt was made to aspirate the lumbosacral space. Cultures of material taken from this region remained sterile. The leukocyte count was 5,800 per cubic millimeter, and the erythrocytic sedimentation rate was 46 mm. during the first hour (Westergren method). On dismissal from the hospital five days after the attempted aspiration, the patient was advised to remain in bed with the exception of three one-hour periods during the day, when she might be permitted to sit up. She was fitted with a supporting garment. Erythromycin, 400 mg., was administered orally every six hours for six weeks. Dihydrostreptomycin, 500 mg., was given intramuscularly every 12 hours for one week.

When the patient was seen again in June, 1956,
symptoms had improved, and the roentgenogram re
progression of fusion across the lumbosacral inter
(fig. 1*C*). By August, 1956, she was able to do her
housework. The roentgenogram revealed further bridg
the lumbosacral space. The erythrocytic sedimentation
had decreased to 13 mm. At her last visit, in January, 1
the roentgenogram disclosed complete intercorporeal fu
(fig. 1*D*). She had no complaints referable to the lu
part of the spinal column.

Case 2.—A 41-year-old housewife came to the clin
August, 1956, because of severe spasms of pain in the l
bar region that had begun three weeks after laminect
done elsewhere in April, 1956. She first had noted ac
pain in the left thigh in the autumn of 1954. This pa
the thigh persisted. Later, it increased in severity ove
period of several weeks, and the patient was referred t
neurosurgeon, who performed myelography in Febru
1956. The myelogram was said to be normal. Pain persis
however, and at the aforementioned laminectomy a nea
degenerating disk and watery fluid were found at the lum
sacral interspace. The patient was relieved of her orig
pain, and the postoperative course was unremarkable f
three weeks. At that time, she noted onset of the se
spasms of pain in the lumbar region that prompted h
referral to the clinic. This pain became excruciating, and a
first was referred to the right flank, abdomen, and ri
groin; later, it extended to the left flank and groin. Th
spasms of pain were initiated by motion of the back or low
extremities, and the patient was most comfortable lying o
her side with the hips and knees flexed, or in a sitting po
tion. Lying directly on her back was extremely painful

Examination of the patient at the clinic was difficult b
cause of repeated attacks of excruciating pain. There w
pronounced limitation of motion of the lumbar portion

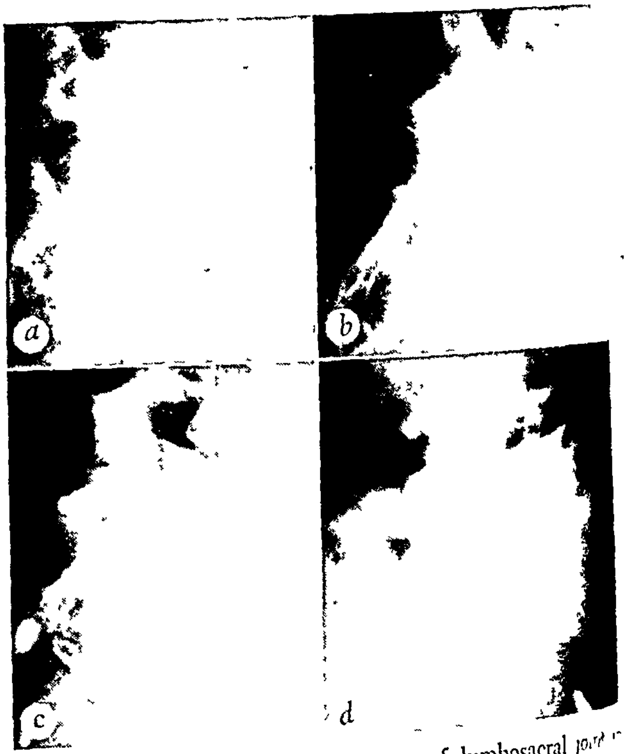

Fig. 2 (case 2).—*A*, appearance of lumbosacral joi
December, 1955, prior to operation on disk. Epiphysial pla
are clearly defined, and interspace is of normal width. B
appearance in August, 1956, 14 weeks after operation. Inte
space has narrowed and adjacent epiphysial plates ar
indistinct. *C*, appearance in December, 1956, showi
further narrowing of lumbosacral space and obliteration of
interspace by new bone. *D*, appearance in April, 195
showing intercorporeal fusion of fifth lumbar and first sa
vertebrae.

the spinal column associated with spasm of the paraspinal musculature. Signs of neurological deficit were absent.

Leukocytes numbered 10,900 per cubic millimeter. The erythrocytic sedimentation rate was 45 mm. A roentgenogram suggested erosion of the epiphysial plates of the lumbosacral interspace (fig. 2*A* and *B*). Cultures of tissue obtained at needle biopsy of this interspace produced an unidentified species of Micrococcus.

Treatment consisted of daily administration of 4 million units of penicillin and 1 Gm. of dihydrostreptomycin for 10 days. Use of a back brace was recommended, and the patient was advised to remain in bed as much as possible for three months.

When examined again in April, 1957, she had resumed most of her usual activities and only occasionally noted aching pain in the right sacroiliac region. Roentgenograms demonstrated fusion of the bodies of the fifth lumbar and first sacral vertebrae (fig. 2*C* and *D*). The sedimentation rate and leukocyte count were normal.

CASE 3.—A 41-year-old laborer came to the clinic in February, 1953, because of intermittent attacks of severe pain in the lower lumbar region associated with aching pain in both thighs. These attacks had been infrequent since the first one, which had occurred in 1935, but during the preceding five months he had noted an increase in frequency and severity of the pain. At this 1953 visit, he was asymptomatic. Except for roentgenographic evidence of narrowing of the lumbosacral interspace, examination showed no pertinent findings.

He returned to the clinic in October, 1954, because of severe pain in the lower lumbar region associated with pain in the left buttock, thigh, calf, and lateral aspect of the foot that had been present almost constantly since January, 1954. The pain had become much worse, however, after he fell from a horse 10 days before this visit. Examination revealed a pronounced list to the left, limited motion of the lumbar portion of the spinal column, tenderness to percussion over the lower part of the back, and limited straight-leg raising on the left. The Achilles tendon reflexes were normal.

Myelography gave evidence of a protruded intervertebral disk at the fourth lumbar interspace, and this diagnosis was confirmed at operation on Oct. 25, 1954, when a large fragment of disk was removed from the fourth interspace and bone grafts were placed across the neural arches of the fourth and fifth lumbar vertebrae, extending the fusion onto the dorsum of the sacrum. On the seventh postoperative day, a temperature of 104 F (40 C) was recorded, followed by a daily temperature of 102.5 F (39.2 C) until the 12th day after operation. On the eighth day after operation, the incision spontaneously emitted a serosanguineous discharge from which was cultured Staphylococcus (Micrococcus) pyogenes that was resistant to the commonly used antibiotics. The patient had been given 800,000 units of penicillin daily through the seventh postoperative day. After treatment with sterile saline compresses, the incision was closed secondarily on Nov. 18, and the remainder of the convalescence was uneventful. The patient was dismissed one week later.

He returned in January, 1955, because of excruciating pain in the left lumbar region that extended around the left flank into the groin and testis. This pain had begun three weeks after his dismissal, and attacks were brought on by such movements as rising from a seated position or even turning over in bed. He described the attacks as "spasms" of pain of such severity that he was unable to speak during the episodes, which lasted for one or two minutes. He had not had further difficulty with the incision, nor had any fever been present in the interim. The patient appeared most comfortable when lying on his side with the knees and hips flexed.

Examination was difficult because almost any motion of the back or lower extremities precipitated an agonizing attack, during which he gripped the sheets with clenched fists, gnashed his teeth, and sweated profusely. After a minute or so, the pain would subside, only to begin again when he attempted to move himself in bed. Neurological examination revealed no impairment of motion, sensation, or reflexes. The leukocyte count was 7,600 per cubic millimeter. The erythrocytic sedimentation rate was 27 mm. A roentgenogram showed some erosion of the epiphysial plates adjacent to the fourth lumbar interspace, suggestive of infection of the interspace.

The site of the midlumbar incision was excised. Directly beneath the skin, just to the left of the midline, a tract of edematous granulation tissue was encountered that could be followed around the bone grafts to their undersurface. Removal of the grafts on the left demonstrated that the granulation tissue extended into the fourth lumbar interspace. Several loose pieces of degenerated disk were removed from the interspace, along with much granulation tissue. A soft rubber drain was placed in the disk space, and the incision was irrigated with sterile saline solution and closed. The drain was removed two days later, by which time the symptoms had subsided almost completely. Staph. pyogenes again was found in the material removed at this second operation. Bacitracin (10,000 units) was given intramuscularly every six hours from Jan. 9 through Jan. 14, and 500 mg. of chloramphenicol was administered by mouth four times a day from Jan. 9 through Jan. 20. Recovery was uneventful. When last examined, in February, 1957, the patient had returned to his normal activities. A roentgenogram revealed solid intercorporeal fusion.

Summary

Infection of the intervertebral space after surgical removal of the nucleus pulposus occurs infrequently. The diagnosis is often difficult because of atypical physical findings and because fever is not prominent. Excruciating "spasms of pain" in the lumbar region associated with severe spasm of the paravertebral musculature and initiated by motion of the back or lower extremities are characteristic of infection of the intervertebral space. The erythrocytic sedimentation rate is nearly always increased, whereas leukocytosis is rare. The most significant roentgenographic sign is erosion of the epiphysial plates adjacent to the involved interspace. This may not appear until five or six weeks after operation. Early aspiration of the interspace may permit identification of the organisms responsible for the infection. Appropriate antibiotics should be administered. However, the most important treatment is adequate immobilization of the spinal column by means of a plaster-of-paris cast or rigid brace. The almost inevitable result of infection of the intervertebral space is sound intercorporeal fusion, provided immobilization is prolonged.

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MEDICAL AND SURGICAL PROBLEMS ARISING AT THE FOURTH NATIONAL BOY SCOUT JAMBOREE

STUDY OF TEMPORARY ENCAMPMENT OF OVER 50,000 BOY SCOUTS AND LEADERS

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and
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Observations made during three preceding national Boy Scout jamborees made it possible to plan needed health facilities for the fourth event in 1957. Of the 52,580 official participants living in the encampment area at Valley Forge Park, 44,798 were Boy Scouts, the vast majority of them being 12 to 16 years of age. Those who wished to participate were required to meet certain health standards. Each of the 38 sections of the encampment had a Section Health Lodge, and a field hospital with 60 beds was set up. Of the 987 patients who were hospitalized it is estimated that less than 150 would have been hospitalized in their home communities, since many boys were admitted on a suspicion of illness or injury. Respiratory diseases accounted for 691 of the 987 admissions. This reflected the increasing incidence of influenza throughout the world, for the 616 cases of influenza were almost entirely responsible for the increased percentage of hospitalizations over former years. Of the 96 patients hospitalized for general surgical conditions, 53 had infections classified as abscess or cellulitis. Of the 50 patients hospitalized for orthopedic surgery, 20 had fractures. This experience leads to an estimate of from 0.5% to 0.7% for the number of patients likely to require hospitalization under the conditions described.

The Fourth National Boy Scout Jamboree held in Valley Forge Park, Pennsylvania, from July 12 to 19, 1957, presented a unique situation with regard to medical care. Although previous national Boy Scout jamborees were similar in nature, none were of this magnitude, and no previous medical report of the incidence and nature of the medical problems occurring in such an encampment has appeared in the literature. The jamboree probably represents the largest temporary encampment of this composition ever held.

No attempt is made here to consider the extensive and careful health and safety planning and activities carried out by the National Boy Scout Council and their representatives (particularly Mr. Donald M. Higgins, director, and Mr. William E. Lawrence, co-director, Health and Safety Services, Boy Scouts of America, New Brunswick, N. J., and Dr. Eugene W. Green, medical director, U. S. Public Health Service, Marine Hospital, Staten Island, N. Y., chief medical officer, Fourth National Boy Scout Jamboree). Rather it is the purpose of this report to outline briefly the nature of the encampment and the medical care facilities utilized and to summarize the medical and surgical problems which arose, with comment on some interesting features of these diseases.

Jamboree Encampment

There were 52,580 official participants living in the encampment area at Valley Forge Park. Of these, 44,798 were Boy Scouts, 5,718 were Scout leaders, and 2,064 were Scout officials, medical and commissary personnel, and others concerned with the administration and operation of the jamboree. The Scouts ranged in age from 11 to 19 years, the vast majority being age 12 to 16 years. Most of the leaders, officials, and other technical and administrative personnel were over 20 years old. The participants arrived from all of the United States, District of Columbia, Hawaii, Puerto Rico, Alaska, Canal Zone, and several foreign countries. The official jamboree began on July 12 and ended July 19, 1957. However, arrival and departure by train and bus required three days before and after these dates, resulting in a 13-day encampment period for purposes of medical care.

All participants in the jamboree were required to have physical examinations prior to coming to the jamboree and were strongly advised to have immunization for smallpox, poliomyelitis, tetanus, and diphtheria. Rejection was advised for those with epilepsy, diabetes, and significant cardiac, pulmonary, and orthopedic disability, as well as for those with obvious acute or other serious chronic disease.

A medical recheck of all participants was carried out on arrival at the jamboree, usually at the time of debarkation from the train or bus, by physicians who accompanied the Boy Scouts and by volunteer

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From the departments of medicine and surgery, Valley Forge Army Hospital, Phoenixville, Pa.

physicians from the local county medical societies. Those who became ill en route were immediately hospitalized on arrival and were not required to report to the jamboree area.

Medical Facilities

The encampment was divided into 38 sections of 1,000 to 1,500 individuals In each was located a Section Health Lodge staffed by two or more physicians who accompanied the Scouts to the jamboree. These health lodges served for the treatment of ambulatory illnesses, minor injuries, and evaluation of cases requring more extensive care They were furnished with only enough equipment for this purpose (six beds and basic drugs and supplies).

Table 1.—*Incidence of Illness Requiring Hospitalization at Three Consecutive National Boy Scout Jamborees*

		Hospitalization	
Jamboree	Population	No	%
2nd (1950)*	Approx 47,000	311	0 66
3rd (1953)*	Approx 43 000	223	0 52
4th (1957)	52,580	987	1 88
		371 (Exclusive of influenza)	0 70

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* Reference 1

Patients requiring more extensive care or hospitalization were sent to the field hospital The 27th Surgical Hospital (Mobile Army), Capt. Clayton D. McConnell, commanding, with 60 beds and extensive diagnostic and therapeutic equipment (including laboratory, x-ray facilities, and dental unit), was set up at the encampment site to provide extensive medical and minor surgical care. The hospital was staffed in the field by the personnel from the 354th General Hospital (U S. Army Reserve), Washington, D. C., Col. Joseph J. Wallace, commanding (This reserve unit was activated for the annual two-week training period, during which time the officers, nurses, and men staffed the field hospital professionally.) This staff was augmented by enlisted personnel from the 27th Surgical Hospital (Mobile Army) At this unit patients were given specialized outpatient care or were hospitalized for more serious illnesses or injuries

Patients whose hospitalization was predicted to exceed 72 hours, who might require a major operation or more specialized diagnosis or care, and whose numbers exceeded the available beds in the field hospital, were transferred to the Valley Forge Army Hospital, Phoenixville, Pa, Brig Gen. Carl W. Tempel, commanding, Col. George L Beatty, chief, department of surgery, and chairman of the committee, Hospitalization Mission, Boy Scout Jamboree. Here 600 beds and corresponding numbers of professional and nursing personnel were made available during the jamboree to provide complete medical and surgical care.

Transportation of patients within the jamboree area and between the encampment and the Valley Forge Army Hospital was carried out by the 888th Medical Company (Ambulance) (Separate), First Lieut. Robert D Costello, commanding.

Constant liaison was maintained between the two hospitals and the Boy Scout Headquarters Section. Here the sole source of contact with patients' relatives was the chief medical liaison officer (Dr. Phillip Dorsen, medical director, U. S. Public Health Service, Marine Hospital, Staten Island, New York), who not only kept parents informed of the patients' progress but obtained operative permission when necessary.

Hospitalized Patients

It is intended to consider primarily the medical and surgical problems of sufficient seriousness to require hospital admission. However, certain aspects of outpatient care will be considered later. The diagnoses listed below were made as a result of careful examination of each clinical record and represent a final or discharge diagnosis and not the impression of the admitting officer. Although the clinical records were brief, the great majority were clear and accurately described the clinical course.

There were 987 hospital admissions from the population of 52,580. Of these one-fourth were returned to the jamboree from the field hospital and three-fourths were transferred to Valley Forge Army Hospital. The incidence of illness requiring hospitalization is compared with that of two previous jamborees in table 1. It can be seen that this incidence is comparable, exclusive of the influenza cases seen at the fourth jamboree.

Table 2 represents an arbitrary breakdown of the case material. It is readily apparent that respiratory diseases account for the majority (70%) of the hospitalizations, and further examination of this group (table 3) reveals that it is in great part due to the occurrence of influenza. Although a detailed report on the clinical and laboratory aspects of these influenza cases is presented elsewhere,[2] the complications are listed in table 3. The disease was mild as seen in this group and there were no serious complications or fatalities. Studies

Table 2.—*Patients Hospitalized at the Fourth National Boy Scout Jamboree*

Respiratory diseases	691
Gastrointestinal diseases	61
Medical conditions (except respiratory and gastrointestinal)	[illegible]
General surgical conditions (except gastrointestinal)	[illegible]
Orthopedic conditions	[illegible]
Eye, ear, nose, and throat conditions	[illegible]
Genitourinary diseases	[illegible]
Total	987

carried out at the Walter Reed Army Institute of Research and at the National Institute of Allergy and Infectious Diseases on throat washings and serums from a number of typical clinical cases revealed the presence of hemagglutinating agents identified as the virus of Far East influenza A, 1957.

TABLE 3.—*Respiratory Illnesses Requiring Hospitalization, Fourth National Boy Scout Jamboree*

Influenza		616
Complications	101	
Pneumonitis	30	
Acute bronchial asthma	27	
Otitis media	26	
Tonsillitis	21	
Pharyngitis and tonsillitis (bacterial)		17
Common cold		18
Bronchitis, nonspecific		11
Pneumonia (bacterial)		5
Pneumonia, primary atypical		1
Pneumonia, aspiration		1
Pulmonary tuberculosis		1
Acute bronchial asthma		21
Total		691

Classification of these acute respiratory illnesses was difficult not only on the basis of the hospital record but also clinically. However, it was felt worthwhile to attempt this classification (table 3).

The 61 cases of gastrointestinal diseases are as follows: acute appendicitis (appendectomy), 2; acute gastroenteritis, 39; probable acute mesenteric lymphadenitis, 3; duodenal ulcer, 2; and obstipation, 15. Stool cultures from several patients with acute gastroenteritis were all negative for enteric pathogens. No cases recognized as food poisoning were observed. Since many of the influenza patients presented with gastrointestinal symptoms, it appears likely that many of these patients diagnosed as having gastroenteritis or mesenteric adenitis actually represented cases of influenza. The final diagnoses of 32 patients admitted for observation for possible appendicitis are as follows: acute appendicitis (appendectomy), 2; acute gastroenteritis, 14; obstipation, 12; probable acute mesenteric lymphadenitis, 3; and cellulitis, right leg, with inguinal lymphadenitis, 1. Appendectomies for acute appendicitis were performed on two boys during the jamboree as compared with six and seven appendectomies, respectively, at the second and third jamborees.

TABLE 4.—*Medical Cases Requiring Hospitalization (Except Respiratory and Gastrointestinal), Fourth National Boy Scout Jamboree*

Infectious diseases		9
Epidemic parotitis	8	
Rubella	1	
Dermatological conditions		25
Dermatitis venenata (Poison ivy)	16	
Psoriasis	1	
Miliaria	1	
Urticaria	7	
Syncope, fatigue syndrome, etc.		13
Heat exhaustion		3
Diabetes mellitus		4
Post-traumatic seizure		1
Angina pectoris		1
Acute rheumatic fever		1
Cerebral (basilar) thrombosis		1
Total		58

The patients admitted for medical conditions other than respiratory or gastrointestinal are tabulated in table 4. Six of these patients, including those with post-traumatic seizure, cerebral thrombosis, and angina pectoris, were adults.

Table 5 shows the general surgical cases requiring hospitalization, except for gastrointestinal problems. Infections, particularly cellulitis, were prominent. A few of the cellulitis cases were a result of obvious open wounds or scratches, but most of these patients presented as erysipeloid lesions of the lower extremities without an obvious portal of entry and associated with lymphangitis. All responded well to penicillin administered parenterally. No cultures could be obtained on these closed lesions, but they appeared similar to surgical infections due to hemolytic Staphylococcus.

TABLE 5.—*General Surgical Cases (Except Gastrointestinal) Requiring Hospitalization, Fourth National Boy Scout Jamboree*

Surgical infections		53
Abscess	18	
Cellulitis	35	
Lacerations		10
Burns (2nd degree)		9
Hemorrhoids (thrombosis, bleeding)		6
Bites (insect and animal)		3
Abrasions		2
Cerebral concussion		1
Incarcerated hernia, reduced		1
Dental caries with cervical adenitis		1
Total		86

Orthopedic and eye, ear, nose, and throat cases are summarized in tables 6 and 7. One case each of the following genitourinary conditions required hospitalization: acute orchitis, acute epididymitis, acute prostatitis, ureteral calculus, and chronic pyelonephritis.

Forty-eight minor and six major operative procedures were performed on hospitalized patients. The minor procedures included suture of lacerations, incision and drainage of abscesses, application of casts, removal of foreign bodies from the ear canal and cornea, and others. The major procedures were two appendectomies and four reductions of major fractures with the patients under general anesthesia.

Sixty of the 987 hospital patients were adults over 20 years of age. There was an incidence, therefore, of 2.07% of illness requiring hospitalization of boys under 20 years of age as compared to 0.82% for adults over 20 years of age.

Outpatients

An accurate reflection of the medical care problem at the jamboree must include a brief referral to the outpatients treated. Approximately 900 outpatients were treated at the field hospital. Several times this number were, of course, seen for minor ailments at the section health lodges. More than three-fourths of these were treated for minor surgical (lacerations, abrasions, contusions, fractures, infections) and ear problems.

Specific problems included 56 cases of respiratory infection, most of which probably represented influenza. There were 12 additional cases of poison ivy and 14 cases of gastroenteritis among the outpatients. There were 144 cases of foreign bodies in the ear canal, almost exclusively beetles, which crawled into the ear during sleep. Treatment of this problem required special equipment and a special treatment area. There were 159 outpatient dental treatments administered.

Comment

It is readily seen from the diagnoses listed that extreme conservatism regarding hospitalization was practiced. It is estimated that less than 150 of these 987 patients would have been hospitalized in their home communities. Many boys were admitted for a suspicion of a more serious illness or injury, who if at home would have been treated as outpatients. Therefore, evaluation and disposition of patients was carried out rapidly to permit boys to return to participate in the jamboree and to return home with their groups. At the close of the jamboree on July 18, 1957, 123 patients remained in the Valley Forge Army Hospital from the jamboree. All of these patients were discharged to home or to a hospital near their home by July 30, 1957.

There were no fatalities among the participants in the jamboree. One fatality occurred in each of the previous two jamborees, in each case due to poliomyelitis, and an additional accidental death occurred in a boy en route to the 1953 jamboree. It is notable that no cases of poliomyelitis were seen at this encampment.

TABLE 6.—*Orthopedic Cases Requiring Hospitalization, Fourth National Boy Scout Jamboree*

Fractures		20
Tibia and/or fibula	8	
Radius and/or ulna	4	
Clavicle	2	
Humerus	1	
Ribs	1	
Cuneiform (compound)	1	
Metacarpal	3	
Sprains, contusions, knee injuries		29
Osteomyelitis of acetabulum		1
Total		50

The low incidence of serious injuries and of diseases related to sanitation is a tribute to the careful planning of the National Health and Safety Service of the Boy Scouts of America as well as to the Boy Scouts themselves. This is particularly true in view of the varied activities carried out at the jamboree, including cooking and sleeping out, rifle range firing, logging, and obstacle racing.

The occurrence of influenza was unfortunate and reflects its increasing incidence throughout the United States and the world. Fortunately, the disease was mild in this group during this encampment, and its incidence was undoubtedly reduced by the fact that the boys were living in the open under tents and not confined to barracks or other closed structures.

TABLE 7.—*Eye, Ear, Nose, and Throat Cases Requiring Hospitalization, Fourth National Boy Scout Jamboree*

Otitis media	8
Otitis externa	7
Foreign body, ear (beetle)	7
Acute frontal sinusitis	2
Fracture, nose	1
Epistaxis	4
Foreign body, cornea	5
Conjunctivitis	1
Contusion, eye	1
Total	36

The incidence of illness requiring hospitalization in a temporary encampment of selected teen-age boys can be predicted from observation of the last three national Boy Scout jamborees. Excluding an epidemic, hospitalization of 0.5% to 0.7% of such a population of 45,000 to 50,000 encamped over a two-week period may be expected.

Summary

Of the 52,580 participants in the Fourth National Boy Scout Jamboree held at Valley Forge, Pa., July 12-19, 1957, 987 (1.88%) developed illnesses requiring hospitalization. These patients were treated at a field hospital at the encampment or at the Valley Forge Army Hospital.

Seventy per cent of these hospitalizations were for respiratory diseases, primarily influenza (of which there were 616 cases). The remainder were for various medical and surgical problems, mostly minor. There were no fatalities and was no occurrence of poliomyelitis.

A low incidence of serious injuries and of disorders related to the encampment itself were noted. Excluding an epidemic, hospitalization of 0.5% to 0.7% of a temporary population of this size and composition may be expected.

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THE USE OF METHYLPHENIDATE (RITALIN) HYDROCHLORIDE IN ALCOHOLISM

PRELIMINARY REPORT ON ITS DIAGNOSTIC AND THERAPEUTIC USE

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Methylphenidate was given intravenously in doses ranging between 20 and 40 mg. to nine neuropsychiatric patients. Its usual effect is to produce euphoria and talkativeness, and all patients began to talk with little or no prodding 5 to 10 minutes after the injection was begun. Three case histories are given to illustrate the resultant facilitation of diagnostic and therapeutic procedure. The most significant effects were a need to communicate verbally, enhanced introspection and critical self-evaluation, undisturbed reality testing, moderate euphoria accompanied by varying degrees of anxiety and tension, a feeling of increased physical strength, and physiological changes (including rises of blood pressure that were occasionally marked) not resulting in undue discomfort. In patients who have undergone a careful evaluation of their cardiovascular status, the methylphenidate promises to be useful in overcoming the deadlock of defense mechanisms, particularly in the diagnosis and treatment of alcoholics.

Methylphenidate (Ritalin) hydrochloride is a central stimulating drug with properties that lie somewhere between the amphetamines and caffeine, although chemically it is unrelated to either one of these preparations.[1] Therapeutic doses produce an increase in alertness and coordinated psychomotor activity. Its effect on the cardiovascular system is marked by an increase in blood pressure, pulse rate, and respiration.[1a]

To this date methylphenidate has been employed primarily to counteract psychomotor retardation in nonpsychotic patients with symptoms of depression and fatigue.[1] Contraindications include agitated psychotic patients and nonpsychotic patients with a low anxiety threshold, since methylphenidate seems to increase anxiety.[1b] There appear to be no contraindications in respect to its physiological effects. Numerous studies have proved that there is no disturbance of liver and kidney functions, and no change in the cellular elements of the peripheral blood has been encountered.

A comparison of methylphenidate with the amphetamines shows a similar increase in alertness and psychomotor activity. However, contrary to the effect of the amphetamines, no mental letdown rebound was noted after withdrawal of therapeutic doses.[1b] Methamphetamine specifically was studied by several investigators as to its properties when administered intravenously.[2] They report findings of marked overtalkativeness, marked euphoria, confidence in one's own abilities, grandiose phantasies, elimination of fatigue, and increased tolerance to pain. Intravenously administered methamphetamine was employed by these authors as an aid in diagnostic and therapeutic interviews with good results[2a] and often in preference to amobarbital (Amytal) sodium, which causes considerable drowsiness and often subsequent amnesia for emotionally charged material elicited during the interview. Intravenously given methamphetamine does not produce either drowsiness or subsequent amnesia.[2a]

One author compares methamphetamine and amobarbital in regard to their ability to elicit conscious and unconscious material and states that the former is valuable in exploring thoughts that are already in consciousness while the latter is capable of revealing unconscious forces. For this reason amobarbital and methamphetamine were sometimes given in combination.[2a]

Methylphenidate, as far as we know, has not been employed in large intravenous doses for diagnostic and therapeutic purposes. This form of administration, however, has been effective in counteracting oversedation resulting from high doses of ataraxics and in chronically withdrawn psychotics.[3]

In this study we gave methylphenidate intravenously in doses ranging between 20 and 40 mg. We found that, similar to intravenously given methamphetamine, it produces in most cases euphoria and overtalkativeness. However, unlike methamphetamine it seems to force verbalization of preconscious and unconscious emotionally charged material. Methylphenidate also appears to act quicker and its effect is of shorter duration. A comparison with amobarbital indicates that methylphenidate creates no drowsiness and no subsequent amnesia for significant material. The use of intravenously given

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From the New Jersey Neuro-Psychiatric Institute.

methylphenidate as an aid to elicit conscious, preconscious, and unconscious material suggested itself especially in the alcoholic patient, who notoriously is well defended against any inquiry into his difficulties.

Method

While the patient was resting and blood pressure and pulse had become stabilized methylphenidate was injected intravenously over a period of from three to five minutes. All patients began talking with little or no prodding 5 to 10 minutes after the injection was begun. The verbalizations obtained from the patients while under the influence of methylphenidate were frequently spontaneous. Few leading questions were asked. The interviewer was familiar with essential aspects of the patient's history.

A total of nine patients took part in the study. Seven were voluntary patients of the alcoholism treatment unit at the New Jersey Neuro-Psychiatric Institute. They volunteered knowing that they were participating in a research project, except for one patient, who only knew that he was to undergo a special examination. The remaining two patients were taken from the chronic population of the institute and are not further discussed here.

Cardiovascular Effects

The figure shows the systolic blood pressure and pulse rate at rest and their maximal increase in each patient after the injection of methylphenidate. The maximum increase in both occurred 10 to 20 minutes after the injection was begun, with a gradual decrease of both thereafter.

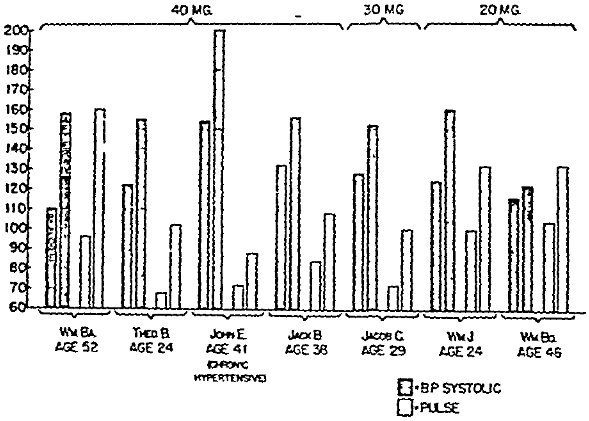
Compared to the amphetamines, methylphenidate caused in our patients a varied and in some cases marked increase in systolic blood pressure together with a much less prominent increase in diastolic blood pressure (not shown in figure). The amphetamines cause a slight drop in pulse rate in contradistinction to methylphenidate, which causes a marked increase. (In view of the occasionally extreme rise in blood pressure and pulse rate, all patients must undergo a careful evaluation of their cardiovascular status prior to the injection of large doses of methylphenidate.)

Electroencephalographic Findings

Electroencephalographic findings after various doses of methylphenidate showed no specific type of reaction up to one-half hour after intravenous injections. Usually there was a slight lowering of the voltage, and the alpha activity became 1 to 2 cps faster. At times after psychic ventilation of a mood induced by methylphenidate or the emergence of some buried conflict there were increases in the amount of alpha activity. No precipitation of fast activity was seen during the period of time used in the study. After the first two subjects, the interest in the study changed from observation of the EEG patterns to the psychological events reported by speech. The talking induced considerable movement artifact in the EEG. The following three cases are representative of the response to intravenously given methylphenidate in the group of seven alcoholic patients.

Report of Cases

Case 1.—A 52-year-old male was separated from his wife and childless and had no permanent residence. He was sober on admission and complained about nervousness, sleeplessness, and nightmares. He appeared to be of low average intelligence, fidgety and anxious in his behavior, but professed to be generally easygoing and optimistic. The initial examination described some features of depression. He gave a history of heavy periodic drinking for most of his life, a very poor work record, and one undesirable discharge from the Army for drinking. He said he worked mostly as a cook. He had separated from his wife four years ago. She was an alcoholic herself. His father, a tobacco farmer in North Carolina, was a heavy drinker. One sister was institutionalized because of mental deficiency.



Blood pressure and pulse rate before and 5 to 20 minutes after intravenous administration of methylphenidate. Wm. Ba: case 1; Theo. B.: case 3; Jack B.: case 2.

Interview.—The patient was given 40 mg. of methylphenidate intravenously in three minutes. He started out saying that when he received the injection it changed the way of his thinking. "I become very interested and ask a lot of questions." He added "I wouldn't miss this for anything." He talked briefly about his wife from whom he is separated. He went on "I am telling stuff I never told before. I've got to do something—never went to a hospital before for liquor." Then he told about his weight loss since last Christmas and added "I lost everything I had—I lost my self-respect." He criticized people for not understanding. Referring to his flow of words, he said that he is not used to talking and now that he does talk a little, he feels silly. About Alcoholics Anonymous he stated, "I don't see the point AA preaches. I don't like to hear other people's troubles." Toward the end he said, "I feel tightened up but loose about talking."

Formulation.—This patient, who previously had shown strong denial of depressive elements in his mood and who gave his information in a superficial, vague way, developed a definite euphoria, a fact that he verbalized. At the same time he said "I am telling stuff I have never told before, I've got to do something." He spoke about the loss of his self-respect and significantly mentioned his feeling about

Alcoholics Anonymous saying "I don't like to hear other people's troubles." Thus, we find that (1) the drug enabled him to face feelings that must have been preconscious but were denied before; (2) he stated certain opinions which were presumably conscious but withheld; (3) he verbalized freely, meaning that he employed an interpersonal relationship in a basically therapeutic fashion.

Case 2.—A 38-year-old male was a salesman who had also done newspaper work and acting. When seen prior to the methylphenidate interview by the ward physician, he appeared moderately anxious with a façade of socially polished behavior and a strong tendency to rationalize. He related in an extrovert, convivial manner and seemed to have a great need to please and impress. He was sober on admission. During the first two days he appeared somewhat restless and frequently demanded to talk to the social worker, who felt that his motivation for treatment, especially psychotherapy, was accompanied by a genuine desire to give up drinking.

The patient had grown up in a comfortable middle-class home, the oldest of two boys and two girls. His father was a successful businessman. He emphasized the protectiveness of his parents, stating that until after he left home after high school he had had practically no responsibilities. His wish was to become a writer. After many involved relationships, usually with married women, he married a girl he met during military service in Austria, where he also began to drink.

Interview.—Three minutes after the injection of 40 mg. of methylphenidate, the patient complained about his breathing and that his limbs tickled. Another two minutes later he stated that he felt like being suspended a couple of millimeters above the table. At this point the injection was completed. He then stated that his legs felt shaky and that he felt like he should bend his legs and arms. Somewhat later he said that he felt ecstatic: "like crying." He related a phantasy of almost hallucinatory distinctness in which his face was close to a girl's cheek. He said "she is very tender." When asked what she is like he said "more like a spirit than a body." On the following day he mentioned that she looked partly like his mother and partly like his last girl friend, with whom he had apparently had most gratifying love experiences.) He went on describing a pale sky in the background. "We two are utterly alone, completely in solitude. There doesn't seem to be any other world. This is better than when I was with her (referring to his last girl friend). Whenever I was with her the experience was marred by outside influences." Later he stated that it had felt similar to alcoholic intoxication but that with this drug he could see himself and knew what was real and what was not.

Formulation.—The patient experienced and revealed under methylphenidate a phantasy which later in psychotherapy proved to be the key to many of his problems. The memory of this phantasy remained vivid for several weeks, until his discharge. We considered this phantasy as having been unconscious prior to the administration of methylphenidate.

Case 3.—A 24-year-old single male patient gave a history of increasingly heavy drinking since the age of 18. He related to this therapist in a cooperative and friendly manner but showed considerable anxiety and tension, which he tended to conceal. His extremely hostile and aggressive behavior under alcohol had led to several arrests and brief jail terms. He was reported to have attacked both his mother and sister sexually while intoxicated. His father was an alcoholic. There had been frequent fights between the parents. During childhood he had had frequent nightmares and had been afraid of the dark.

Interview.—The patient reported a "violent surge of energy from his body" after the administration of 40 mg. of methylphenidate intravenously. He felt like killing somebody. "My hands feel like tight fists." He had hyperventilation and his eyelids fluttered. He told that he had had the feeling of killing someone before. He felt as though he had to talk. He described how his muscles were tightened up. "I feel wild inside, want to swing." One half-hour after the injection he told the examiner "I wanted to grab your throat when you stood over me. It nearly ran away with me."

Formulation.—This patient, who had a history of violent outbursts when intoxicated, gave on the ward the general impression of being cooperative and polite. Under methylphenidate the urge to kill entered consciousness and could be experienced and verbalized while he managed to retain conscious control over it. Alcohol, as we learned from the history, aided also the emergence of ego-alien drives, but with simultaneous loss of the basic ego functions.

Summary of Findings

Exploratory interviews after intravenous injection of 20 to 40 mg. of methylphenidate, simultaneously with electroenceophalographic examinations and recording of blood pressure and pulse rate, produced in the majority of our patients verbalization of emotionally significant material far beyond that expected in the usual initial interviews with alcoholic patients.

The most significant results were (1) a need or pressure to communicate verbally; (2) enhanced introspection and critical self-evaluation; (3) undisturbed reality testing; (4) moderate euphoria (absent in one case) accompanied by varying degrees of anxiety and tension; (5) a feeling of increased physical strength; and (6) physiological changes consisting of increased blood pressure, pulse rate, and respiration not resulting in undue discomfort. These features occurred with remarkable consistency during the interviews and in some cases even more so after the patients returned to the ward when they were talking to personnel with whom they were familiar.

The group therapist, who saw the patients twice weekly in group sessions, had the impression that after the methylphenidate interviews all patients became significantly more involved in therapy. There was also a definite tendency in these patients to continue to communicate in their therapeutic sessions, especially previously withheld conscious material and preconscious material. The general impression was that of a sustained decrease of psychic resistance. Two of the patients (cases 2 and 3), for whom intensive individual therapy was available, moved rapidly toward new insights with remarkable emotional participation.

Conclusions

Considering the frequency of occasions in which psychotherapy with alcoholics is deadlocked by virtue of defense mechanisms, especially denial, we felt that the results of the methylphenidate interviews were promising. Although this study has inherent limitations that do not permit us to draw definite conclusions about the effects of intravenously given methylphenidate in alcoholic patients, we believe we have shown that the drug merits further investigation in this direction and that there are strong indications of its usefulness in the diagnosis and treatment of alcoholics.

Box 1000 (Dr. Browne-Mayers).

The methylphenidate hydrochloride used in this study was supplied as Ritalin by Ciba Pharmaceutical Products, Inc., Summit, N. J.

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CLINICAL NOTES

WIRE FRAME CERVICAL BRACE

Louis Spigelman, M.D.
and
Max Lerman, C.O., Los Angeles

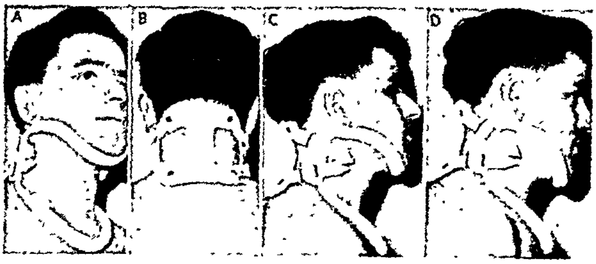
The literature is replete with descriptions of devices to immobilize the cervical spine. Such devices as the Thomas collar and Forrester brace are useful and adequate supports. The wire frame cervical brace has been developed because it has certain additional advantages.

A cervical brace must perform certain definite functions: 1. It should provide adequate immobilization. 2. It should provide transmission of the weight of the head from the cervical spine to the shoulders and trunk. 3. It should be well tolerated by the patient and easily adjustable.

The wire frame brace we have developed meets all these requirements. It is particularly advantageous in cases of severe ligamentous sprain, cervical arthritis, herniated intervertebral disk, and minor subluxation. The brace should not be used where complete immobilization is necessary, such as in tuberculous lesions, severe fractures, or complete dislocations.

The brace consists of an anterior frame (see figure, *A*) shaped to fit the contours of the mandible, fastened together at the sides with leather straps and buckles to a posterior or occipital portion (see figure, *B*), and molded to fit the posterior portion of the cervical spine and occiput. The anterior frame and posterior portions are constructed of a malleable wire padded with foam rubber and covered with plastic. The brace is easily adjustable by the doctor or the orthotist to immobilize the cervical spine in the neutral, flexed, or hyperextended position (see figure, *C* and *D*).

The advantages of the wire frame brace are as follows: 1. It is extremely light, comfortable, cool, and easily kept clean. 2. It is easily adjusted. 3. It is simple to apply. 4. The appearance is not objectionable. 5. It is inexpensive.



A, anterior portion of brace with patient's neck slightly extended. *B*, occipital or posterior portion. *C*, lateral view with neck extended. *D*, lateral view with neck slightly flexed.

We have used this brace on a large number of patients with excellent results and a minimum of complaints.

6221 Wilshire Blvd. (48) (Dr. Spigelman).

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From the Mount Sinai Hospital.

CONVULSIVE SEIZURES AFTER ADMINISTRATION OF CHLORPROMAZINE

Capt. O'Neill Barrett Jr. (MC), U. S. Army

Chlorpromazine has been widely used in recent years in the treatment of a variety of disorders. Side-effects and complications subsequent to its use are fairly common and have been adequately discussed elsewhere.[1] Sainz [2] states that over 50% of patients treated show some associated side-reaction. One of the complications which has not received adequate attention but which is potentially quite serious is the epileptogenic effect of this agent. This effect has been noted primarily in patients with latent or overt convulsive disorders. It is the purpose of this communication to describe two cases in which convulsions apparently were precipitated by the administration of chlorpromazine and to stress the danger inherent in the use of this agent in susceptible individuals.

Report of Cases

Case 1.—A 32-year-old man was admitted to the gastroenterology service because of vomiting and hematemesis after a heavy alcoholic bout. He had been previously admitted on two occasions within the past year with the same complaints. During these hospitalizations, he had received oral and intramuscular administrations of promazine hydrochloride but had been given no chlorpromazine. History was unrevealing, except for chronic alcoholism. There was nothing to suggest previous seizures, and the family history was likewise unrevealing.

Physical examination revealed a well-developed, well-nourished man who appeared intoxicated but otherwise in distress. Vital signs were stable and remained so throughout the hospital stay. There was minimal epigastric tenderness without spasm, rebound, or other abnormalities. No neurological abnormalities were noted.

Routine laboratory studies, including serum amylase determination, were normal. After admission he was afebrile. Intravenous fluids were administered, and he was given 25 mg. of chlorpromazine intramuscularly at 4 p. m. and 9 p. m. for sedation. His clinical course was uneventful until approximately 24 hours after admission. At that time, the patient gave a loud yell and developed a Jacksonian type of seizure of the right side, which progressed into a typical grand mal attack. This episode was witnessed by the attending ward physician Fortunately, no further chlorpromazine was administered, and no further convulsions were noted. Subsequent neurological examination revealed normal skull x-rays and normal lumbar puncture, and an electroencephalogram done four days after the seizure showed "evidence of a convulsive disorder compatible with epilepsy." The patient has had no further seizures during a three-month follow-up period.

Case 2.—A 66-year-old woman was admitted to the general medical service because of nausea, vomiting, and a "convulsion." She had been in excellent health until the evening of admission, when, two hours after the ingestion of "corned beef," she developed nausea and vomited three times. There was no associated fever, severe abdominal cramping, or other gastrointestinal symptoms. A local physician was summoned, who administered 25 mg. of chlorpromazine intramuscularly. Within 10 minutes she had a grand mal seizure which was witnessed by the attending physician. After this incident, the patient was given 100 mg of pentobarbital (Nembutal) and was brought to the emergency ward.

Her history and examination revealed generally good health throughout. She had noted infrequent headaches and spells of "light-headedness" for several years without associated syncope, vertigo, or any evidence of a convulsive disorder. Also noted was recurrent "heartburn," with no other symptoms to suggest ulcer or gallbladder disease. No complaints indicative of diabetes were elicited.

Physical examination on admission revealed a well-developed, well-nourished, obese woman in no acute distress She was drowsy but responded well to stimulation and answered questions intelligently. Vital signs were stable Physical examination was unrevealing except for slight hyperresonance of the lungs. Results of a complete neurological examination were normal.

Initial laboratory data revealed a white blood cell count of 15,000 per cubic millimeter, with 88% neutrophils; on the following day the count was 8,500 per cubic millimeter, with 65% nuetrophils. Urinalysis showed 1+ sugar and 2+ acetone on admission, but results of repeated examinations subsequently were all normal. A glucose tolerance test revealed the following values: fasting, 82 mg. per 100 cc, one-half hour, 170 mg.; one hour, 147 mg.; two hours, 134 mg.; three hours, 132 mg.; four hours, 47 mg., and five hours, 79 mg. The curve was felt to be compatible with latent diabetes with a secondary hypoglycemic reaction[3] Lumbar puncture and skull x-rays revealed nothing. An electroencephalogram made two days after admission revealed "an abnormal awake and sleep pattern consistent with a convulsive disorder." This was repeated nine days later and showed the same pattern.

The patient's hospital course was uneventful thereafter, she remained afebrile and had no further gastrointestinal complaints or convulsive difficulty. She has been asymptomatic during the four months since discharge.

Comment

The effect of chlorpromazine on the electroencephalogram of normal persons has been described by several investigators. Lehmann and Hanrahan[4] studied 71 psychiatric patients over a four-month period, administering chlorpromazine in doses of 50 to 800 mg. per day. No convulsive episodes were noted. They point out that, in contrast to barbiturates, chlorpromazine does not appear to alter the basic character of the electroencephalogram, although it did tend to produce a clear tracing free from muscle artifacts and tension discharges Shagass[5] administered 25 mg. of chlorpromazine intravenously to 11 psychiatric patients whose electroencephalograms showed no specific abnormalities. No changes attributable to the drug were noted. Azima and Ogle[6] performed a similar study and found no changes on the awake record. During sleep or periods of drowsiness, the usual sleep pattern became manifest. Liberson[7] gave the drug to nine patients with chronic schizophrenia over five

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months in doses up to 400 mg. per day. No abnormalities were produced, although he did note a significant regularizing effect on the alpha rhythm.

Lomas and co-workers,[8] on the other hand, in one of the largest clinical studies done on the complications of chlorpromazine therapy, reported an incidence of epileptic seizures of 1.3% in 800 patients observed. Significantly, only 1 of the 10 patients who had convulsions had no previous tendency to epilepsy. In the remaining nine, seizures had been uncommon or absent for relatively long periods of time prior to the study. With one exception, there were no further episodes after withdrawal of the drug. These workers were unable to establish any relationship to dosage or duration of treatment.

Fabisch[9] administered chlorpromazine intravenously in therapeutic doses to 20 epileptics who showed unstable electroencephalograms and found an increase in paroxysmal cerebral activity in 18. No convulsive seizures were produced, but, in some, changes in the rhythm of breathing and apparent involuntary opening of the eyes suggested alterations of consciousness. Samuels[10] has reported a case of chlorpromazine intoxication in which an 18-year-old girl took 50-100 tablets of the drug. During the 15th and 18th hours after ingestion she had three convulsive episodes. An electroencephalogram taken one month prior to this showed "a probable predisposition to seizures" with no previous convulsive history. An electroencephalogram taken one-half hour after the initial seizure showed repeated paroxysms of spike and slow waves with a duration of 12 seconds.

Mauceri and Strauss[11] have also reported a case of chlorpromazine intoxication, in which a 19-year-old girl took an unknown quantity of the drug and subsequently developed impaired consciousness and some amnesia. An initial electroencephalogram showed diffuse spike and wave patterns which were not present on a second tracing made 12 days later. They suggest that large doses of chlorpromazine can produce a type of electroencephalogram seen in epileptics in a patient without epilepsy or organic brain damage. Sainz[2] makes reference to the epileptogenic action of chlorpromazine in susceptible individuals and points out that overt and latent epileptics show either an increase in frequency or an appearance of seizures within a week of starting the drug therapy. The effect is felt to be self-limited, lasting two to four days.

Summary

The epileptogenic effect of chlorpromazine has been studied experimentally by observing the effect of this drug on the electroencephalogram of both normal persons and those known to have either latent or overt convulsive disorders. Clinical correlation has also been obtained by observing resultant complications in susceptible persons to whom the drug has been administered.

No significant electroencephalographic changes are noted in the tracings of normal persons to whom the drug has been given. In known epileptics and also in persons later found to have a convulsive tendency, on the other hand, significant abnormalities of the electroencephalogram as well as actual convulsive seizures have been precipitated by administration of the drug.

Attention is therefore called to the fact that this drug may lead to dangerous complications in certain individuals. There is a need for more careful screening of patients prior to the administration of the drug, as well as for an awareness of the potential epileptogenic effect in susceptible persons with no previous clinical history of seizures.

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COUNCIL ON DRUGS

Report of the Council

The Council has authorized publication of the following report.

H. D. KAUTZ, M.D., *Secretary.*

METHODS FOR IDENTIFICATION OF HOSPITAL SOLUTIONS AND PREPARATIONS OF DRUGS

The Council has considered a request to investigate the feasibility of developing a uniform system for identification of solutions used in hospitals. The chief basis for exploring this subject arises in connection with previous proposals for adding dyes to color certain medicinal solutions as an aid to their identification and safe use. Although the addition of dyes for this purpose is apparently a practice limited to a few hospitals, it has raised a question whether dangerous confusion might arise by the application of different colors for the same preparation by different institutions. Accidents attributable to confused identity of solutions, although rare, have occurred with both extemporaneously and commercially prepared drug preparations. These have happened especially in situations in which more than one person is involved in obtaining, preparing, and transporting such preparations for administration.

In addition to the proposed use of dyes, other means, such as colored labels, special tags, captioned abbreviations, and oddly shaped or uniquely surfaced containers, can be considered to fall within the category of various aids that have been suggested or employed to identify drugs and chemicals. Labels of certain colors and color combinations are specified under the federal Food, Drug, and Cosmetic Act to distinguish between various commercial preparations and potencies of insulin. On the other hand, the federal agency responsible for administering the law, the Food and Drug Administration, has discouraged the addition of dyes for coloring parenteral solutions because of a lack of adequate information regarding their compatibility and nontoxicity for this purpose. Most dyes certified under the law are for addition to foods and to orally and externally administered drug preparations. Indeed, drug and pharmaceutical manufacturers voluntarily make wide use of colored labels for all types of drugs, as well as dyes for coloring certain types of medicaments. Coloring of tablets to distinguish dosage sizes and the tinting of antiseptic solutions to delineate the area of application are common examples of the varied use of color in marketing medicinal articles. Some drug preparations also exhibit a characteristic color which is inherent.

In its consideration of the application of color for the identification of individual or classes of medicinal preparations, the Council was impressed by the practical limitations of the visual spectrum for achieving distinction between the vast number and kinds of preparations employed in medicine as well as by the existing widespread use of colored medicaments for different purposes. Other practical difficulties include color blindness and the use of light-protective colored glass containers for certain drug preparations. Both the Council and its Committee on Toxicology have separately reached the conclusion that the use of color as a coding device is more likely to contribute to than to prevent confusion in the identity of drug preparations. They also concur with the view of the Food and Drug Administration that the addition of dyes to parenteral solutions for the purpose of identification should be discouraged.

In view of the inevitable human tendency to discover and substitute short-cuts for careful inspection of labels, the employment of colors, abbreviations, or other adjunctive methods for identification of drug preparations should be generally discouraged, except when these may be utilized to improve the legibility of labeling. The Council believes that the problem of mistakes in identity and improper use of solutions and drugs for any purpose both inside and outside hospitals can best be met by greater emphasis on the education of all health personnel and patients to exercise due care in applying and consulting properly informative labels. Care should be taken to insure legibility of container labels by prominent display of the name or active ingredient as well as the potency and dosage of drug preparations. Details which might overshadow such crucial information should be separately presented as a package enclosure.

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FOURTH INJECTION OF POLIOMYELITIS VACCINE

ROUTINE fourth injections of poliomyelitis vaccine are not considered a necessary part of the immunization series at this time. This was the consensus of Surgeon General Leroy E. Burney's Poliomyelitis Advisory Committee, which met in Washington on March 21 to discuss the advisability of fourth injections. The group, which included Dr. Julian Price of the A. M. A. Committee on Poliomyelitis, agreed that all available evidence points to the high effectiveness of the present three-dose schedule of poliomyelitis vaccine.

The committee agreed that exceptions may be made by individual physicians under circumstances such as the beginning of local outbreaks of poliomyelitis or with respect to persons going to places where the incidence of poliomyelitis is high. If the fourth injection is given, it need not be administered sooner than a year after completion of the three-injection schedule. The decision to administer an additional injection, the committee felt, should be made by the individual physician.

According to reports of the United States Public Health Service, vaccine effectiveness is being maintained at levels of approximately 90% after three injections. Studies also showed that substantial immunity continued for at least three or four years in the vast majority of those completely vaccinated.

The committee also issued a warning that, unless there is an immediate stepping up of vaccination programs throughout the country, serious outbreaks of poliomyelitis may occur this summer. It was pointed out that 48,500,000 Americans under 40 years of age have as yet not received a single dose of vaccine. Of the 65 million young people under age 20, one out of four has not been vaccinated, while 40% of all children under age 5 also have not started their vaccinations. About 40 million doses of vaccine are currently available. Thirty million are in the hands of vaccine manufacturers and the balance are in physicians' offices, drug stores, and local health departments.

Once again the A. M. A. Committee on Poliomyelitis urges doctors everywhere to see to it that every patient under 40 begins or completes his Salk vaccine series during this prepoliomyelitis season.

DEATH CERTIFICATES

The proper completion of death certificates is of great importance to the family of the deceased, to the civil and criminal courts, and to public health authorities in general. According to *American Jurisprudence*, a reputable legal digest, the majority view of those in the legal field is that death certificates are "admissible to show the cause of death of the person named therein if the certificate is made pursuant to statute and the record is properly kept as required by law." It is also admitted though that "In many instances the statutes declare such certificates to be presumptive or prima facie evidence of the facts therein stated."

In addition, the importance of the death certificate in initiating and authenticating claims for life insurance or pensions and for settling the estate of a deceased is unequalled by any other single record prepared by the physician. It provides factual information about the cause and the circumstances and the manner of death, the date and place of interment, and the age, sex, race, and parentage of the decedent. Lastly, these certificates provide the best available data on the epidemiology of major causes of death and on the communicable diseases.

In 1956, changes were made in the standard death certificate form. These changes were designed to keep the certificates up-to-date and assist in the accuracy of collected information. Detailed explanations of the new forms were previously described and discussed in THE JOURNAL.[1]

The physician's responsibility in death registration is generally limited to the medical part of the certificate, whereas the funeral director, through the family, completes the personal information portion and files the certificate. Of interest is the fact that there is no requirement in any state that specifies that the attending physician actually see the body after death before certifying a natural death. There is no place on the death certificate where the physician actually states he saw the patient dead. This common practice of certifying death without seeing the body, while no doubt accurate in the majority of cases, is a most unsatisfactory arrange-

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THE SAN FRANCISCO MEETING

AMERICAN MEDICAL ASSOCIATION, ONE HUNDRED AND SEVENTH ANNUAL MEETING

SAN FRANCISCO, JUNE 23-27, 1958

OFFICIAL CALL

To the Officers and Members of the American Medical Association

The 107th Annual Meeting of the American Medical Association will be held in San Francisco, June 23-27, 1958.

House of Delegates: The House of Delegates will convene at 10 a. m. Monday, June 23, in the Concert and Rose Rooms of the Sheraton-Palace Hotel. The representation of the constituent associations in the House for the 1958 Annual Meeting is as follows:

Alabama	2
Alaska	1
Arizona	1
Arkansas	2
California	16
Colorado	2
Connecticut	3
Delaware	1
District of Columbia	2
Florida	3
Georgia	3
Hawaii	1
Idaho	1
Illinois	10
Indiana	4
Iowa	3
Isthmian Canal Zone	1
Kansas	2
Kentucky	2
Louisiana	2
Maine	1
Maryland	2
Massachusetts	6
Michigan	6
Minnesota	4
Mississippi	2
Missouri	4
Montana	1
Nebraska	2
Nevada	1
New Hampshire	1
New Jersey	6
New Mexico	1
New York	17
North Carolina	3
North Dakota	1
Ohio	8
Oklahoma	2
Oregon	2
Pennsylvania	11
Puerto Rico	1
Rhode Island	1
South Carolina	2
South Dakota	1
Tennessee	3
Texas	7
Utah	1
Vermont	1
Virginia	3
Washington	3
West Virginia	2
Wisconsin	4
Wyoming	1

The scientific sections of the American Medical Association, the Medical Corps of the Army, the Medical Corps of the Navy, the Medical Corps of the Air Force, the Public Health Service, and the Veterans Administration are entitled to one delegate each.

Meetings and Exhibits: The Scientific Assembly of the Association will open with the General Scientific Meetings to be held Monday, June 23, at 2 p.m. and on Tuesday, June 24, at 9 a. m.

The scientific exhibits will be housed in the Civic Auditorium, Main Auditorium, and corridors; the technical exhibits will be in the Civic Auditorium Plaza Exhibit Hall.

Sections of the Scientific Assembly will meet Tuesday, June 24, beginning at noon; all day Wednesday and Thursday, June 25 and 26; and on Friday morning, June 27, as follows:

CONVENING AT 9 A. M.
THE SECTIONS ON

- Diseases of the Chest
- Experimental Medicine and Therapeutics
- General Practice
- Laryngology, Otology and Rhinology
- Military Medicine
- Nervous and Mental Diseases
- Pediatrics
- Physical Medicine
- Radiology
- Surgery, General and Abdominal
- Miscellaneous Topics: Session on Allergy

CONVENING AT 2 P. M.
THE SECTIONS ON

- Anesthesiology
- Dermatology
- Gastroenterology and Proctology
- Internal Medicine
- Obstetrics and Gynecology
- Ophthalmology
- Orthopedic Surgery
- Pathology and Physiology
- Preventive Medicine
- Urology
- Miscellaneous Topics: Sessions on Injury in Sports; Medical Professional Liability; and Traffic Accidents

Inaugural: The Inaugural Meeting at which the President will be installed, will be held on Tuesday evening, June 24.

Registration: The Registration Bureau, which will be located in the entrance lobby of the Plaza Exhibit Hall of the Civic Auditorium, will be open as follows:

Sunday, June 22–12 noon–4 p. m.
Monday, June 23–8 a. m.–5:30 p. m.
Tuesday, June 24–8:30 a. m.–5:30 p. m.
Wednesday, June 25–8:30 a. m.–5:30 p. m.
Thursday, June 26–8:30 a. m.–5:30 p. m.
Friday, June 27–8:30 a. m.–12 noon

DAVID B. ALLMAN, President
E. VINCENT ASKEY, Speaker, House of Delegates
GEORGE F. LULL, Secretary

MEMBERS OF THE HOUSE OF DELEGATES

A Preliminary Roster of the Legislative Body of the American Medical Association

The list of members of the House of Delegates for the session is incomplete. Following is a list of the holdover members of the House of Delegates and of the newly elected members who have been reported to the Secretary in time to be included:

DELEGATES FROM CONSTITUENT ASSOCIATIONS

ALABAMA

J. Paul Jones, Camden
E. Bryce Robinson Jr., Fairfield

ALASKA

Milo H. Fritz, Anchorage

ARIZONA

Jesse D. Hamer, Phoenix

ARKANSAS

James M. Kolb, Clarksville
Rufus B. Robins, Camden

CALIFORNIA

Lewis A. Alesen, Los Angeles
E. Vincent Askey, Los Angeles
Cyril J. Attwood, Oakland
Donald Cass, Los Angeles
James E. Feldmayer, Exeter
Paul D. Foster, Los Angeles
Leopold H. Fraser, Richmond
Henry Gibbons, San Francisco
John Winston Green, Vallejo
Eugene F. Hoffman, Los Angeles
R. Stanley Kneeshaw, San Jose
J. Lafe Ludwig, Los Angeles
Frank A. MacDonald, Sacramento
Sam J. McClendon, San Diego
Dwight L. Wilbur, San Francisco

COLORADO

Edward E. H. Munro, Grand Junction
Kenneth C. Sawyer, Denver

CONNECTICUT

Thomas J. Danaher, Torrington
John N. Gallivan, East Hartford
Stanley B. Weld, Hartford

DELAWARE

H. Thomas McGuire, New Castle

DISTRICT OF COLUMBIA

Victor R. Alfaro, Washington
Raymond T. Holden, Washington

FLORIDA

Reuben B. Chrisman Jr., Coral Gables
Francis T. Holland, Tallahassee
Louis M. Orr, Orlando

GEORGIA

Eustace A. Allen, Atlanta
Spencer A. Kirkland, Atlanta
Charles H. Richardson, Macon

HAWAII

Harry L. Arnold Jr., Honolulu

IDAHO

Raymond L. White, Boise

ILLINOIS

Walter C. Bornemeier, Chicago
Everett P. Coleman, Canton
Harlan English, Danville
Warren W. Furey, Chicago
Percy E. Hopkins, Chicago
B. E. Montgomery, Harrisburg
J. Mather Pfeiffenberger, Alton
H. Kenneth Scatliff, Chicago
Carl Steinhoff, Chicago
C. Paul White, Kewanee

INDIANA

Eli S. Jones, Hammond
Earl W. Mericle, Indianapolis
Wendell C. Stover, Boonville
Gordon B. Wilder, Anderson

IOWA

Francis C. Coleman, Des Moines
Robert N. Larimer, Sioux City
Donovan F. Ward, Dubuque

ISTHMIAN CANAL ZONE

Harry Eno, Cristobal

KANSAS

George F. Gsell, Wichita
L. R. Pyle, Topeka

KENTUCKY

Robert C. Long, Louisville
W. Vinson Pierce, Covington

LOUISIANA

James Q Graves, Monroe
Philip H Jones, New Orleans

MAINE

Philip P. Thompson Jr, Portland

MARYLAND

Robert vanLieu Campbell,
Hagerstown
George H Yeager, Baltimore

MASSACHUSETTS

Lawrence R Dame, Greenfield
Philip S Foisie, Milton
Charles G Hayden, Boston
Henry F Howe, Cohasset
Nicholas S Scarcello, Worcester
Norman A. Welch, Boston

MICHIGAN

Wyman D Barrett, Detroit
John S DeTar, Milan
Willis H Huron, Iron Mountain
William A Hyland, Grand Rapids
Robert L. Novy, Detroit
Clarence I Owen, Detroit

MINNESOTA

J Arnold Bargen, Rochester
Orwood J. Campbell, Minneapolis
George A. Earl, St Paul
Frank J Elias, Duluth

MISSISSIPPI

John P. Culpepper Jr,
Hattiesburg
John F. Lucas, Greenwood

MISSOURI

Frank L Feierabend, Kansas City
Durward G Hall, Springfield
Joseph C Peden Sr, St. Louis
H E Petersen, St Joseph

MONTANA

Raymond F Peterson, Butte

NEBRASKA

Earl F. Leininger, McCook
Joseph D. McCarthy, Omaha

NEVADA

Wesley W. Hall, Reno

NEW HAMPSHIRE

Louis C Theobald, Exeter

NEW JERSEY

C Byron Blaisdell, Asbury Park
William F. Costello, Dover
Aldrich C. Crowe, Ocean City
J. Wallace Hurff, Newark
L Samuel Sica, Trenton
Elmer P Weigel, Plainfield

NEW MEXICO

Earl L Malone, Roswell

NEW YORK

A H. Aaron, Buffalo
Walter P. Anderton, New York
R. J Azzari, Bronx
Peter J. DiNatale, Batavia
Gerald D Dorman, New York
Edward P. Flood, Bronx
John M Galbraith, Glen Cove
Leo E Gibson, Syracuse
Thurman B Givan, Brooklyn
James Greenough, Oneonta
J. Stanley Kenney, New York
John J Masterson, Brooklyn
Norman S Moore, Ithaca
Peter M Murray, New York
Carlton E. Wertz, Buffalo
E Christopher Wood,
White Plains
Ezra A Wolff, Forest Hills

NORTH CAROLINA

Elias S Faison, Charlotte
Millard D. Hill, Raleigh
Charles F. Strosnider, Goldsboro

NORTH DAKOTA

Willard A Wright, Williston

OHIO

Paul A. Davis, Akron
Charles L Hudson, Cleveland
Carl A. Lincke, Carrollton
Carll S Mundy, Toledo
L. Howard Schriver, Cincinnati
Clifford C Sherburne, Columbus
George A Woodhouse,
Pleasant Hill
Herbert Wright, Cleveland

OKLAHOMA

Wilkie D. Hoover, Tulsa
Malcom E Phelps, El Reno

OREGON

E G. Chuinard, Portland
Archie O Pitman, Hillsboro

PENNSYLVANIA

Daniel H. Bee, Indiana
William F. Brennan, Pittsburgh
Gilson Colby Engel, Philadelphia
Harold B Gardner, Harrisburg
M Louise C Gloeckner,
Conshohocken
Samuel B. Hadden, Philadelphia
Louis W. Jones, Wilkes-Barre
George S. Klump, Williamsport
Thomas W McCreary, Rochester
Charles L Shafer, Kingston
Elmer G Shelley, North East

PUERTO RICO

F. Sánchez-Castaño, Vega Baja

RHODE ISLAND

Charles J Ashworth, Providence

SOUTH CAROLINA

George D. Johnson, Spartanburg
William Weston Jr, Columbia

SOUTH DAKOTA

Arthur A Lampert, Rapid City

TENNESSEE

William C. Chaney, Memphis
Charles C. Smeltzer, Knoxville

TEXAS

Joseph B. Copeland, San Antonio
John K. Glen, Houston
Louis C. Heare, Port Arthur
Milford O Rouse, Dallas
Troy A. Shafer, Harlingen
Truman C Terrell, Fort Worth
James H. Wooten Jr., Columbus

UTAH

Kenneth B Castleton,
Salt Lake City

VERMONT

James P. Hammond, Bennington

VIRGINIA

Vincent W Archer,
Charlottesville
W. Linwood Ball, Richmond
W Allen Barker, Roanoke

WASHINGTON

M Shelby Jared, Seattle
Jesse W. Read, Tacoma
Alvia G. Young, Wenatchee

WEST VIRGINIA

Frank J Holroyd, Princeton
Walter E. Vest, Huntington

WISCONSIN

Joseph C Griffith, Milwaukee
L O. Simenstad, Osceola
William D. Stovall, Madison
Dexter H Witte, Milwaukee

WYOMING

Albert T Sudman, Green River

DELEGATES FROM THE SECTIONS AND GOVERNMENT SERVICES

ANESTHESIOLOGY

Edward B Tuohy, Los Angeles

DERMATOLOGY

Winfred A Showman,
Tulsa, Okla

DISEASES OF THE CHEST

Hollis E Johnson,
Nashville, Tenn

EXPERIMENTAL MEDICINE AND THERAPEUTICS

Edgar V. Allen, Rochester, Minn.

GASTROENTEROLOGY AND PROCTOLOGY

Stuart T. Ross, Garden City, N Y.

GENERAL PRACTICE

Lester D Bibler, Indianapolis

INTERNAL MEDICINE

Charles T. Stone Sr,
Galveston, Texas

LARYNGOLOGY, OTOLOGY AND RHINOLOGY

Gordon F Harkness,
Davenport, Iowa

MILITARY MEDICINE

Charles L. Leedham, Cleveland

NERVOUS AND MENTAL DISEASES

Francis M Forster,
Washington, D C

OBSTETRICS AND GYNECOLOGY

Ralph E Campbell,
Madison, Wis

OPHTHALMOLOGY

Ralph O Rychener,
Memphis, Tenn

ORTHOPEDIC SURGERY

H Relton McCarroll, St Louis

PATHOLOGY AND PHYSIOLOGY

Lall G Montgomery, Muncie, Ind

PEDIATRICS

Woodruff L Crawford, Rockford

PHYSICAL MEDICINE

Walter Zeiter, Cleveland

PREVENTIVE MEDICINE

R T Johnstone, Los Angeles

RADIOLOGY

Eugene P Pendergrass,
Philadelphia

SURGERY, GENERAL AND ABDOMINAL

Grover C Penberthy, Detroit

UROLOGY

Jay J Crane, Los Angeles

UNITED STATES AIR FORCE

Dan C Ogle

UNITED STATES ARMY

Silas B Hays

UNITED STATES NAVY

Bruce E Bradley

PUBLIC HEALTH SERVICE

John D Porterfield

VETERANS ADMINISTRATION

Roy A Wolford

Ex Officio Members

PAST PRESIDENTS

Louis H. Bauer, New York
Walter L. Bierring, Des Moines, Iowa
Edward L. Bortz, Philadelphia
John W. Cline, San Francisco
Elmer Hess, Erie, Pa.
Charles G Heyd, New York
Ernest E. Irons, Chicago
Roger I. Lee, Boston
Edward J. McCormick, Toledo, Ohio
Walter B. Martin, Norfolk, Va.
Dwight H. Murray, Napa, Calif.
R L. Sensenich, South Bend, Ind.
Harrison H. Shoulders, Nashville, Tenn.

PAST TRUSTEES

William F. Braasch, Rochester, Minn.
Allen H. Bunce, Atlanta, Ga
Ralph A. Fenton, Portland, Ore.
W. M. Johnson, Winston-Salem, N. C.
James R. McVay, Kansas City, Mo.
James R. Miller, West Hartford, Conn.
Robert A. Peers, Palo Alto, Calif.
James R. Reuling, Windermere, Fla.

CHAIRMAN OF COUNCILS

Joseph D. McCarthy, Omaha
Leland S. McKittrick, Brookline, Mass.
Homer L. Pearson, Miami, Fla.
B. E. Pickett Sr., Carrizo Springs, Texas

Secretary
George F. Lull, Chicago
Assistant Secretary
Ernest B. Howard, Chicago
Editor
Austin Smith, Chicago
Student American Medical Association
Two Delegates

REFERENCE COMMITTEES OF THE HOUSE OF DELEGATES

The Speaker of the House of Delegates, Dr. E. Vincent Askey, California, has appointed the following delegates to serve on the reference committees of the House at the San Francisco meeting:

Amendments to the Constitution and Bylaws
Kenneth C. Sawyer, *Chairman*, Colorado
Millard Hill, North Carolina
George S. Klump, Pennsylvania
Donovan F. Ward, Iowa
Norman S. Moore, New York

Board of Trustees and Secretary, Reports of
J. Stanley Kenney, *Chairman*, New York
Dwight Wilbur, California
Frank J. Holroyd, West Virginia
Joseph B. Copeland, Texas
Eugene Pendergrass, Section on Radiology

Credentials
A. A. Lampert, *Chairman*, South Dakota
Spencer Kirkland, Georgia
Edward Touhy, Section on Anesthesiology
Stanley Weld, Connecticut
William Weston Jr., South Carolina

Executive Session
L. Howard Schriver, *Chairman*, Ohio
Charles L. Shafer, Pennsylvania
Donald Cass, California
William D. Stovall, Wisconsin
Gordon Harkness, Section on Laryngology, Otology, and Rhinology

Hygiene, Public Health, and Industrial Health
Cyril J. Attwood, *Chairman*, California
William F. Brennan, Pennsylvania
Edward Flood, New York
Fred W. Dixon, Ohio
Earl F. Leininger, Nebraska

Insurance and Medical Service
Thomas McCreary, *Chairman*, Pennsylvania
Thurman Givan, New York
John S. DeTar, Michigan
J. Wallace Hurff, New Jersey
H. Relton McCarroll, Section on Orthopedic Surgery

Legislation and Public Relations
R. J. Azzari, *Chairman*, New York
Dan C. Ogle, United States Air Force
J. Arnold Bargen, Minnesota
Francis F. Holland, Florida
Paul D. Foster, California

Medical Education and Hospitals
Norman A. Welch, *Chairman*, Massachusetts
Grover C. Penberthy, Section on Surgery, General and Abdominal
Walter C. Bornemeier, Illinois
Wesley Hall, Nevada
Peter Murray, New York

Medical Military Affairs
Troy A. Shafer, *Chairman*, Texas
H. Thomas McGuire, Delaware
Archie O. Pitman, Oregon
Francis Forster, Section on Nervous and Mental Diseases
W. Vinson Pierce, Kentucky

Miscellaneous Business
Frank A. MacDonald, *Chairman*, California
Charles F. Strosnider, North Carolina
G. B. Wilder, Indiana
L. R. Pyle, Kansas
John J. Masterson, New York

Reports of Officers
James Q. Graves, *Chairman*, Louisiana
Harold Gardner, Pennsylvania
Rufus Brittain, Virginia
B. E. Montgomery, Illinois
Earl W. Mericle, Indiana

Rules and Order of Business
Joseph C. Griffith, *Chairman*, Wisconsin
Ezra A. Wolff, New York
Louis C. Theobald, New Hampshire
Philip Foisie, Massachusetts
J. Paul Jones, Alabama

Sections and Section Work
Wilkie D. Hoover, *Chairman*, Oklahoma
H. Kenneth Scatliff, Illinois
Winfred A. Showman, Section on Dermatology
Jesse W. Read, Washington
Kenneth B. Castleton, Utah

Tellers
Edward E. H. Munro, *Chairman*, Colorado
Earl Malone, New Mexico
Albert T. Sudman, Wyoming
Milo Fritz, Alaska
James Feldmayer, California

Sergeants at Arms
C. Paul White, *Master*, Illinois
F. Sánchez-Castaña, Puerto Rico
Eustace A. Allen, Georgia

OFFICERS OF THE AMERICAN MEDICAL ASSOCIATION, 1957-1958

President—David B. Allman, Atlantic City, N. J.

President-elect—Gunnar Gundersen, La Crosse, Wis.

Vice President—Jesse D. Hamer, Phoenix, Ariz.

Secretary—George F. Lull, Chicago.

Assistant Secretary—Ernest B. Howard, Chicago.

Treasurer—J. J. Moore, Chicago.

Speaker, House of Delegates—E. Vincent Askey, Los Angeles.

Vice Speaker, House of Delegates—Louis M. Orr, Orlando, Fla.

General Manager—F. J. L. Blasingame, Chicago.

Editor—Austin Smith, Chicago.

Business Manager—Mr. Russell H. Clark, Chicago.

Board of Trustees—E. S. Hamilton, Chairman, Kankakee, Ill., 1958; R. M. McKeown, Coos Bay, Ore., 1958; H. H. Hussey, Washington, D. C., 1959; L. W. Larson, Bismarck, N. D., 1960; J. Z. Appel, Lancaster, Pa., 1960; J. P. Price, Florence, S. C., 1961; G. M. Fister, Ogden, Utah, 1962; C. A. Nafe, Indianapolis, Ind., 1962; the President; the President-elect; and, ex officio, the Vice President, Treasurer, Speaker and Vice Speaker of the House of Delegates.

STANDING COMMITTEES OF THE HOUSE OF DELEGATES

Judicial Council—G. A. Woodhouse, Pleasant Hill, Ohio, 1958; J. M. Hutcheson, Richmond, Va., 1959; L. A. Buie, Rochester, Minn., 1960; R. Ward, San Francisco, 1961; H. L. Pearson Jr., Chairman, Miami, Fla., 1962; G. F. Lull, *Secretary*, Chicago.

Council on Medical Education and Hospitals—V. Johnson, Rochester, Minn., 1958; L. S. McKittrick, Chairman, Brookline, Mass., 1958; C. T. Stone Sr., Galveston, Texas, 1959; W. A. Bunten, Cheyenne, Wyo., 1959; J. M. Faulkner, Cambridge, Mass., 1960; H. English, Danville, Ill., 1960; G. A. Caldwell, New Orleans, 1961; J. W. Cline, San Francisco, 1961; W. C. Wescoe, Kansas City, Kan., 1962; W. B. Allan, Baltimore, 1962; E. L. Turner, Secretary, Chicago.

Council on Medical Service—R. B. Chrisman Jr., Coral Gables, Fla., 1958; J. F. Burton, Oklahoma City, 1958; J. D. McCarthy, Chairman, Omaha, 1959; J. Lafe Ludwig, Los Angeles, 1959; H. B. Mulholland, Charlottesville, Va., 1960; H. B. Woolley, Idaho Falls, Idaho, 1960; C. E. Wertz, Buffalo, 1961; T. J. Danaher, Torrington, Conn., 1961; R. L. Novy, Detroit, 1962; D. H. Murray, Napa, Calif.; Mr. George W. Cooley, Secretary, Chicago.

Council on Constitution and Bylaws—S. H. Osborn, Hartford, Conn., 1958;* F. S. Winslow, Rochester, N. Y., 1959; B. E. Pickett Sr., Chairman, Carrizo Springs, Texas, 1960; Walter E. Vest, Huntington, W. Va., 1961; W. W. Furey, Chicago, 1962; J. Z. Appel, Lancaster, Pa.; the *President, and the Speaker and Vice Speaker of the House of Delegates.*

STANDING COMMITTEES OF THE BOARD OF TRUSTEES

Council on Drugs—W. C. Cutting, San Francisco, 1958; O. O. Meyer, Madison, Wis., 1958; M. H. Seevers, Ann Arbor, Mich., 1958; T. M. Brown, Washington, D. C., 1958; L. S. Goodman, Salt Lake City, 1959; P. H. Long, Brooklyn, 1959; W. G. Workman, Bethesda, Md., 1959; F. A. Simeone, Cleveland, 1959; C. A. Dragstedt, Chicago, 1960; I. Starr, Philadelphia, 1960; J. M. Hayman, Boston, 1960; E. M. K. Geiling, Chicago, 1961; E. M. Nelson, Washington, D. C., 1961; H. K. Beecher, Boston, 1961; T. Sollmann, Chairman, Cleveland, 1962; J. P. Leake, Washington, D. C., 1962; A. C. Curtis, Ann Arbor, Mich., 1962; H. D. Kautz, Secretary, Chicago.

Council on Scientific Assembly—H. R. Viets, Brookline, Mass., 1958; J. A. Bargen, Rochester, Minn., 1958; S. P. Reimann, Philadelphia, 1959; A. McMahon, Chairman, St. Louis, 1959; L. W. Larson, Bismarck, N. D., 1960; C. A. Lincke, Carrollton, Ohio, 1960; M. E. DeBakey, Houston, Texas, 1961; S. P. Newman, Denver, 1962; W. Scott, Los Angeles, 1962; T. G. Hull, Secretary, Chicago.

Council on Medical Physics—R. Chamberlain, Philadelphia, 1958; O. Glasser, Cleveland, 1958; A. C. Cipollaro, New York, 1958; F. C. Bost, San Francisco, 1959; F. H. Krusen, Chairman, Rochester, Minn., 1959; M. R. Mobley, Florence, S. C., 1959; L. R. Dragstedt, Chicago, 1960; G. J. *Thomas, Pittsburgh*, 1960; G. E. Wakerlin, Chicago, 1961; I. S. Wright, New York, 1961; H. H. Reese, Madison, Wis., 1962; D. Vail, Chicago, 1962; S. Warren, Boston, 1962; R. E. DeForest, Secretary, Chicago.

Council on Foods and Nutrition—W. J. Darby, Nashville, Tenn., 1958; C. A. Elvehjem, Madison, Wis., 1958; J. B. Youmans, Nashville, Tenn., 1958; L. A. Maynard, Ithaca, N. Y., 1959; G. A. Goldsmith, New Orleans, 1959; C. S. Davidson, Chairman, Boston, 1959; C. A. Smith, Boston, 1960; D. B. Hand, Geneva, N. Y., 1960; R. Jackson, Columbia, Mo., 1961; G. R. Cowgill, Hamden, Conn., 1961; W. H. Griffith, Los Angeles, 1962; P. L. White, Secretary, Chicago.

Council on Industrial Health—R. T. Johnstone, Los Angeles, 1958; L. C. McGee, Wilmington, Del., 1958; C. F. Shook, Toledo, Ohio, 1958; J. N. Gallivan, East Hartford, Conn., 1959; V. C. Baird, Houston, Texas, 1959; O. A. Sander, Milwaukee, 1959; R. A. Kehoe, Cincinnati, 1960; E. S. Jones, Hammond, Ind., 1960; W. P. Shepard, Chairman, New York, 1961; M. N. Newquist, New York, 1961; P. S. Richards, Salt Lake City, 1962; J. H. Sterner, Rochester, N. Y., 1962; B. D. Holland, Secretary, Chicago.

Council on National Defense—R. L. Sensenich, South Bend, Ind., 1958; H. C. Lueth, Evanston, Ill., 1958; H. S. Diehl, Chairman, Minneapolis, 1959; R. L. Meiling, Columbus, Ohio, 1959; C. P. Hungate, Kansas City, Mo., 1960; W. B. Martin, Norfolk, Va., 1960; David H. Poer, Atlanta, Ga., 1961; H. B. Wright, Cleveland, 1961; R. A. Benson, Bremerton, Wash., 1962; P. H. Long, Brooklyn, 1962; Mr. F. W. Barton, Secretary, Chicago.

Council on Rural Health—F. S. Crockett, Chairman, Lafayette, Ind., 1958; W. W. Washburn, Boiling Springs, N. C., 1958; C. S. Mundy, Toledo, Ohio, 1959; C. R. Henry, Little Rock, Ark., 1959; F. A. Humphrey, Ft. Collins, Colo., 1960; N. H. Gardner, E. Hampton, Conn., 1960; A. T. Stewart, Lubbock, Texas, 1961; C. B. Andrews, Sonoma, Calif., 1961; W. J. Weese, Ontario, Ore., 1962; W. A. Wright, Williston, N. D., 1962; Mrs. A. *Hibbard*, Secretary, Chicago.

Council on Mental Health—L. H. Bartemeier, Chairman, Baltimore, 1958; W. H. Baer, Peoria, Ill., 1958; H. F. Ford, Galveston, 1958; L. H. Smith, Philadelphia, 1959; G. E. Gardner, Boston, 1959; F. M. Forster, Washington, D. C., 1960; H. T. Carmichael, Chicago, 1961; M. R. Kaufman, New York, 1962; R. J. Plunkett, Secretary, Chicago.

Committee on Legislation—G. M. Fister, Chairman, Ogden, Utah; C. B. Blaisdell, Asbury Park, N. J.; R. B. Chrisman Jr., Coral Gables, Fla.; F. C. Coleman, Des Moines, Iowa; H. English, Danville, Ill.; F. J. Holroyd, Princeton, W. Va.; J. L. Ludwig, Los Angeles; J. E. McDonald, Tulsa, Okla.; D. O. Meeker, Riverside, Conn.; M. L. Phelps, Denver; G. E. Twente, Jackson, Miss.; Mr. W. E. Whyte, Secretary, Chicago.

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* Deceased

The Secretary, Assistant Secretary, and Editor are ex officio members of all Standing Committees.

REGISTRATION

The Registration Bureau, which will be located in the entrance lobby of the Plaza Exhibit Hall of the Civic Auditorium, will be open as follows:

Sunday, June 22—12 noon—4 p. m.
Monday, June 23—8 a. m.—5:30 p. m.
Tuesday, June 24—8:30 a. m.—5:30 p.m.
Wednesday, June 25—8:30 a. m.—5:30 p. m.
Thursday, June 26—8:30 a. m.—5:30 p. m.
Friday, June 27—8:30 a. m.—12 noon

An information window will be operated in connection with the Registration Bureau.

Who May Register

Members—Active, Affiliate, Associate, Service, and Honorary—and invited guests may take part in the work of the sections and may register for attendance at meetings.

Residents, interns, senior medical students, Student A. M. A. members, and registered nurses will be given registration cards at a designated window. These should be filled in and presented at the window indicated, together with a card or letter signed by the superintendent of the hospital where they are registered or the dean of the medical school they attend.

Register Early

Members living in the San Francisco area, as well as all other physicians who are in San Francisco on Sunday, are urged to register as early as possible. Registration is open on Sunday, June 22, between 12 noon and 4 p. m.

The names and convention or local addresses of those who register will be included in the Daily Bulletin. This will enable visiting physicians to find friends who have registered.

Suggestions That Will Facilitate Registration

Members who present Advance Registration Cards can be registered with little or no delay if the name of your convention hotel or local address, the number of guests you wish to register and a check mark opposite the Scientific Section in which you wish to vote are filled in prior to registering.

Present the completed card at windows marked "Advance Registration" and you will receive a badge and a copy of the Official Program.

Members without Advance Registration Cards will find blank cards to fill in on tables near the registration windows. The filled-in card should be presented, together with your American Medical Association Membership pocket card, at the window indicated. Your pocket card will be returned to you and you will receive a badge and a copy of the Official Program.

Scientific Assembly Registration for General Officers and Delegates at the Sheraton-Palace Hotel

General officers of the American Medical Association and members of the House of Delegates may register for the Scientific Assembly near the entrance to the Concert and Rose Rooms at the Sheraton-Palace Hotel on Monday, June 23, beginning at 8:30 a. m. Delegates are requested to register for the Scientific Assembly before presenting credentials to the Reference Committee on Credentials of the House of Delegates. Delegates are urged to register early so that all members of the House of Delegates may be seated in time for the opening session of the House, which will convene at 10 a. m. Monday, June 23.

If any delegate or officer is in San Francisco on Saturday or Sunday, June 21 or June 22, he may register for the Scientific Assembly in the Secretary's Office in Rooms A and B of the Sheraton-Palace Hotel.

Scientific Assembly Registration for Constituent Association Officers

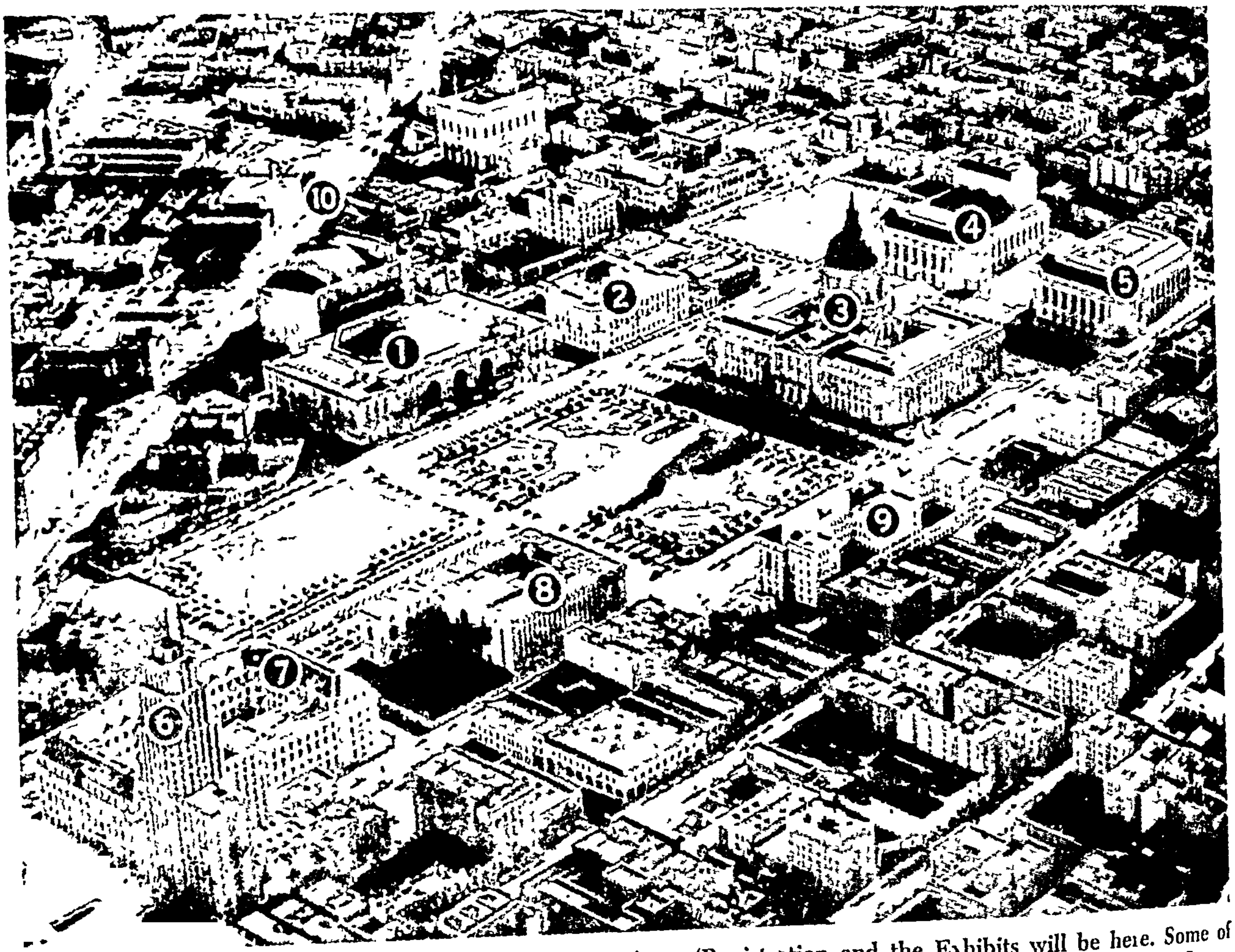
The President, President-elect, and Constitutional Secretary of the constituent associations may register for the Scientific Assembly in the Secretary's Office in Rooms A and B at the Sheraton-Palace Hotel on Saturday and Sunday, June 21 and 22, or any time after 12 noon on Monday, June 23, during the week of meeting.

From 8:30 a. m. to 12 noon on June 23, officers of constituent associations may register for the Scientific Assembly near the entrance to the Concert and Rose Rooms at the Sheraton-Palace Hotel.

Registration for Lay Executive Secretaries

Lay executive secretaries of component and constituent associations may register in the Secretary's Office in Rooms A and B at the Sheraton-Palace Hotel on Saturday and Sunday, June 21 and 22, or any time after 12 noon Monday, June 23, during the week of meeting.

From 8:30 a. m. to 12 noon on June 23, lay executives may register near the entrance of the Concert and Rose Rooms at the Sheraton-Palace Hotel.



Air view of San Francisco's Civic Center. 1. Auditorium. (Registration and the Exhibits will be here. Some of the Section Meetings will be in buildings nearby.) 2. Board of Health Building. 3. City Hall. 4. Opera House. 5. Veterans Building. 6. Empire Hotel. 7. Federal Building. 8. Library. 9. State Building. 10. South Market Street.

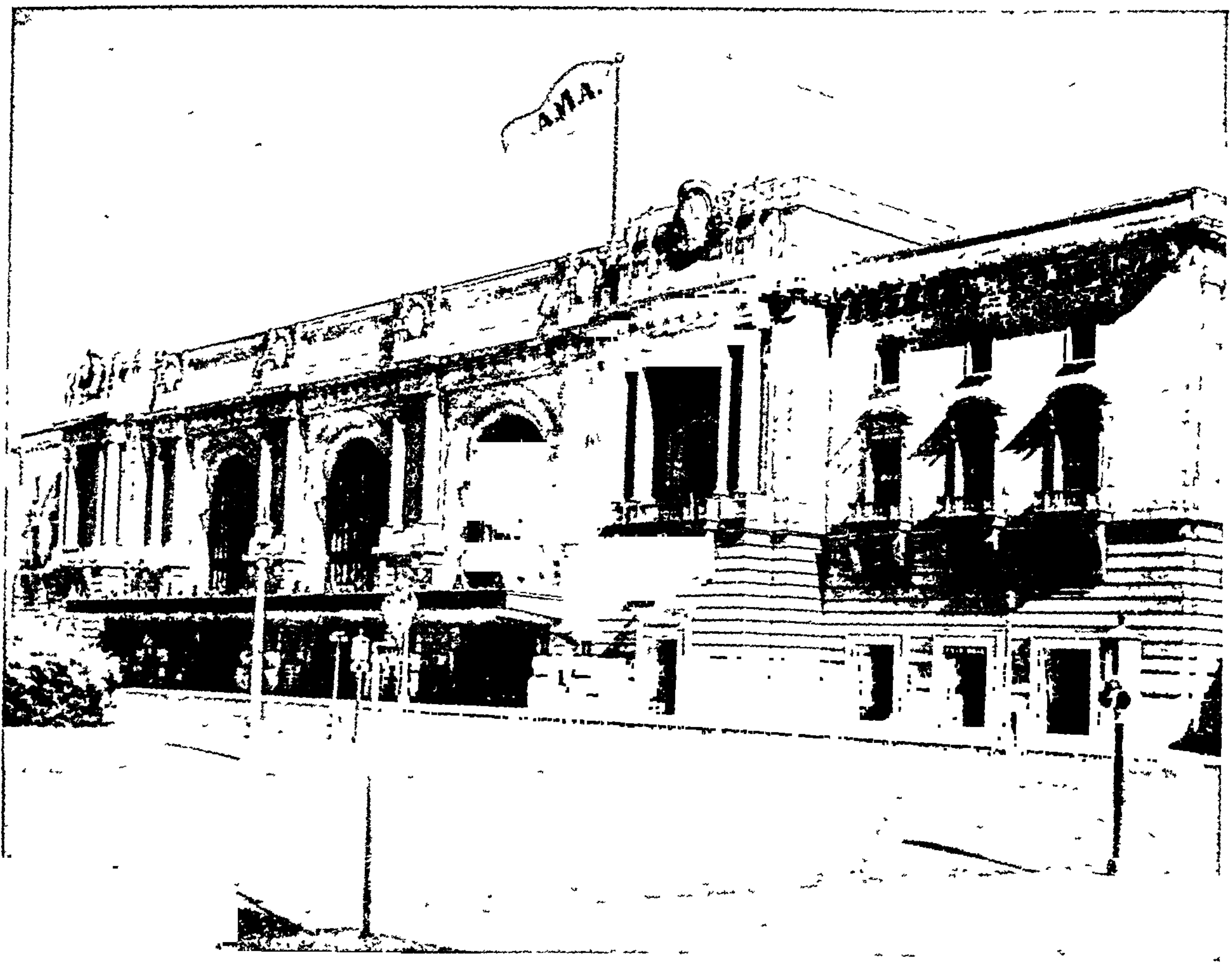
CREDIT FOR ATTENDING MEETING

Military Services

Point credit will be given to active and reserve officers of the Air Force, Army, and Navy who attend the San Francisco Meeting. Proper credit cards may be obtained at the desk outside the meeting room for the Section on Military Medicine, Room 301-303, third floor, Civic Auditorium, on Wednesday, Thursday, and Friday mornings, June 25, 26, 27.

General Practice

The American Academy of General Practice will give credit in Category I to those members of the Academy who attend the San Francisco Meeting. Proper credit cards may be obtained at the entrance to Polk Hall, Civic Auditorium, on Wednesday, Thursday, and Friday mornings, June 25, 26, 27.



The Civic Auditorium, where the exhibits and some of the Section Meetings will be.

HOUSE OF DELEGATES

The House of Delegates will meet at 10 a m. Monday, June 23, 1958, in the Concert and Rose Rooms at the Sheraton-Palace Hotel.

The Reference Committee on Credentials will meet near the entrance to the Concert and Rose Rooms at 8.30 a m. Monday, June 23. Credentials should be presented to the Reference Committee on Credentials as early as possible, so that the official roll of the House may be prepared and the House of Delegates may organize promptly and proceed with its business. The Reference Committee will also meet preceding each subsequent meeting of the House of Delegates.

Each delegate should present properly executed credentials signed by the president or secretary of the constituent association, by the chairman or secretary of the section, or by the surgeon general or chief medical director of the government service he represents. Alternates presenting credentials should see that the delegates whose places they are to take have signed the alternate authorization.

Each delegate, *before* registering with the Reference Committee on Credentials, should register for the Scientific Assembly at a desk near the entrance to the Rose and Concert Rooms.

Meeting rooms have been provided for the use of Reference Committees of the House of Delegates. Reference Committee meetings must be held at the time and in the room assigned so that any who are interested in referred matters may appear before the committees.

Typists will be available in the Secretary's Office (Rooms A and B) for preparing official reports, resolutions, and motions.

FOR PHYSICIANS ONLY

On Tuesday and Wednesday, June 24 and 25, *from* 8:30 a. m. to 12 noon, the Scientific and Technical *Exhibits*, as well as the Television and Motion Picture *programs, at the* New Plaza Exhibit Hall will be open only to A. M. A. Member Physicians. Only physicians wearing a physician's badge will be admitted to the Exhibit area on Tuesday and Wednesday mornings.

MEETING PLACES

House of Delegates: Sheraton-Palace Hotel, Market at New Montgomery Street. Rose and Concert Rooms.

General Scientific Meetings: Civic Auditorium, Polk Hall.

Inaugural Meeting: Sheraton-Palace Hotel, Market at New Montgomery Street. Rose and Concert Rooms.

Motion Pictures: Civic Auditorium, Room 1, Plaza Exhibit Hall.

Color Television: Civic Auditorium, Larkin Hall.

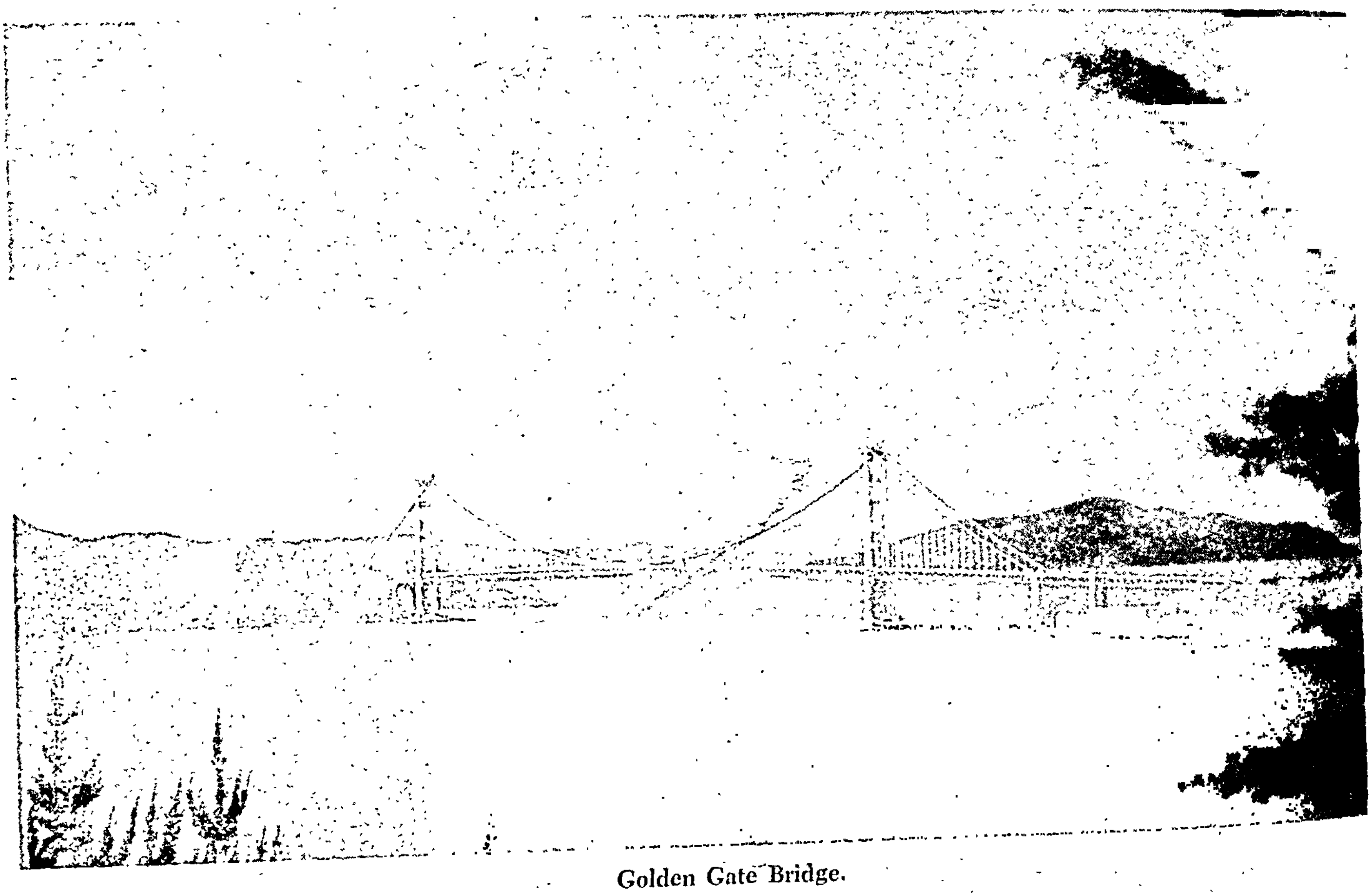
Laryngology, Otology and Rhinology: Masonic Temple, Van Ness Avenue and Market St. Black Room.

Military Medicine: Civic Auditorium, Rooms 301-303.

Nervous and Mental Diseases: Masonic Temple, Van Ness Avenue and Market Street. Room 2.

Obstetrics and Gynecology: Civic Auditorium, Polk Hall.

Ophthalmology: Fairmont Hotel, Terrace Room.



Golden Gate Bridge.

General Headquarters: Registration Bureau, Information Bureau, and Technical Exposition: Civic Auditorium, Plaza Exhibit Hall. Scientific Exhibit: Civic Auditorium, Main Auditorium and corridors. Entrance to Civic Auditorium—Larkin and Fulton Streets.

Sections of Scientific Assembly

Anesthesiology: Masonic Temple, Van Ness Avenue and Market Street. Room 1.

Dermatology: California Masonic Memorial Temple, Nob Hill, California and Taylor Sts. Auditorium.

Diseases of the Chest: California Masonic Memorial Temple, Nob Hill, California and Taylor Sts. Auditorium.

Experimental Medicine and Therapeutics: High School of Commerce, Franklin and Hayes Streets. Auditorium.

Gastroenterology and Proctology: Veterans War Memorial, Civic Center. Auditorium.

General Practice: Civic Auditorium, Polk Hall.

Internal Medicine: High School of Commerce, Franklin and Hayes Streets. Auditorium.

Orthopedic Surgery: Mark Hopkins Hotel, Peacock Room.

Pathology and Physiology: Civic Auditorium, Rooms 301-303.

Pediatrics: Masonic Temple, Van Ness Avenue and Market Street. Auditorium.

Physical Medicine: Masonic Temple, Van Ness Avenue and Market Street. Room 1.

Preventive Medicine: Masonic Temple, Van Ness Avenue and Market Street. Auditorium.

Radiology: Mark Hopkins Hotel, Peacock Room.

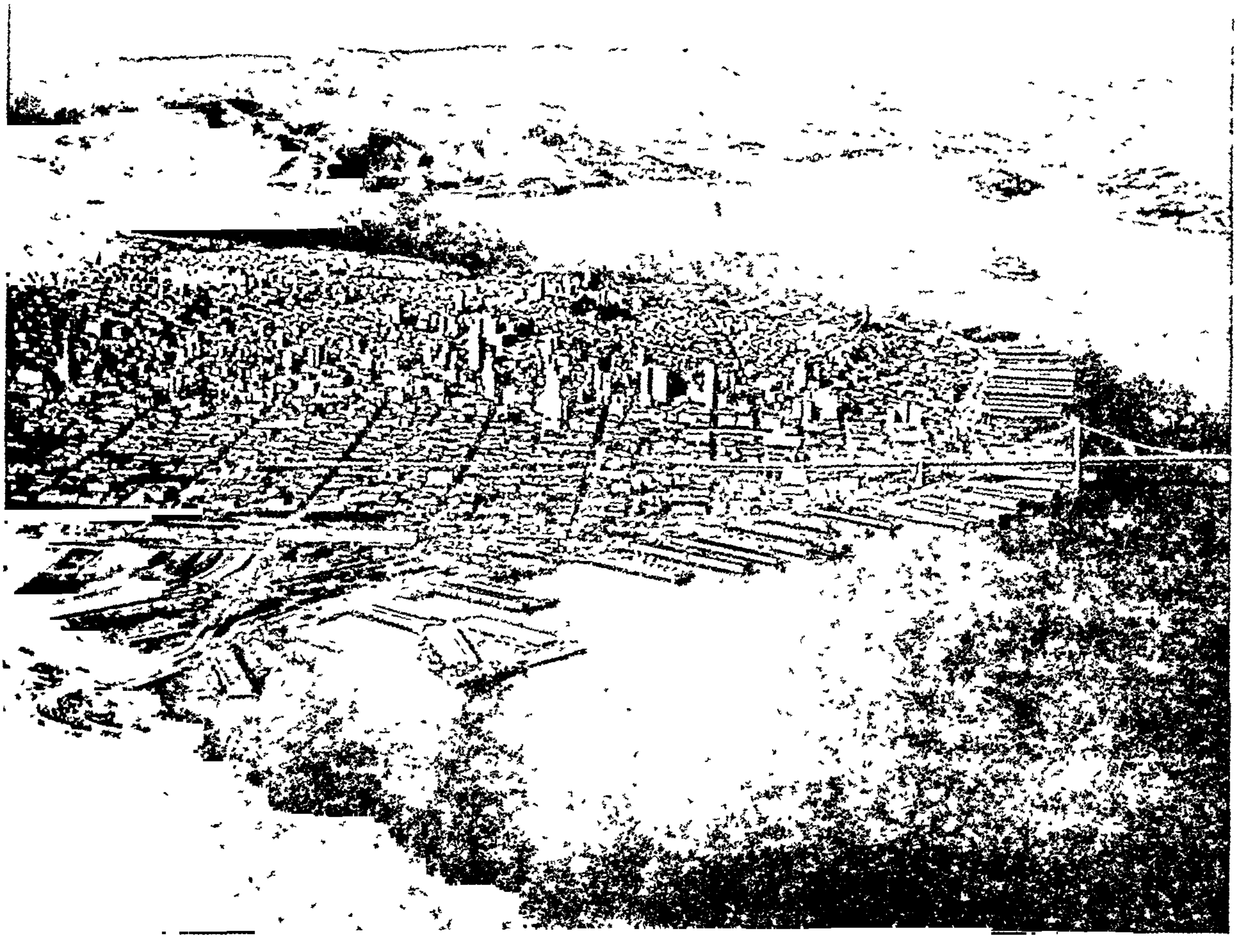
Surgery, General and Abdominal: Veterans War Memorial, Civic Center. Auditorium.

Urology: Masonic Temple, Van Ness Avenue and Market Street. Room 2.

Miscellaneous Topics, Session on Allergy: Civic Auditorium, Larkin Hall; **Session on Injury in Sports:** Mark Hopkins Hotel, Peacock Room; **Session on Medical Professional Liability:** Masonic Temple, Van Ness Avenue and Market St. Black Room; **Session on Traffic Accidents:** Masonic Temple, Van Ness Avenue and Market St. Black Room.

SAN FRANCISCO HOTEL RESERVATIONS

If hotel reservations have not yet been secured by physicians other than delegates or officers of the Association who expect to attend the San Francisco meeting, it is suggested that such physicians fill in and send directly to the A. M. A. Housing Bureau, Room 300, 61 Grove Street, San Francisco 2, the application form that may be found on advertising page 154 of this issue of THE JOURNAL. Applications for hotel reservations should *not* be sent to the American Medical Association offices in Chicago. That will delay receipt of the application by the Housing Bureau and processing of your hotel reservation.



Downtown San Francisco, showing both bridges, with Alcatraz Island in the background.

INAUGURAL CEREMONY

Dr. Gunnar Gundersen, La Crosse, Wis., will be inaugurated as President of the American Medical Association at special ceremonies Tuesday evening, June 24, in the Rose and Concert Rooms of the Sheraton-Palace Hotel. The Inaugural Ceremony is open to physicians and their families, exhibitors, and guests.

ENTERTAINMENT

President's Reception and Ball

The President of the Association will be honored after the Inaugural Ceremony with a reception and ball, to be held in the Gold Ballroom of the Sheraton-Palace Hotel, Tuesday evening, June 24, from 10 p. m. to 1 a. m. Members of the Association and their guests are invited to attend.

Physicians Art Exhibit

The 21st Annual Exhibit of Art Works by American Physicians will be held in conjunction with the A. M. A. Annual Meeting in the Civic Auditorium, San Francisco, between June 23 and 27, 1958. For further information contact R. H. Gwartney, M.D., 1098 D. St., San Bernardino, Calif.

Golf Tournament During San Francisco Meeting

The 42nd annual American Medical Golfing Association Tournament will be held Monday, June 23, at the Olympic Club at Lakeside, San Francisco. All male members of the A. M. A. are eligible to participate in the tournament and become members of this group. The tournament fee includes green fees, tournament expenses, luncheon, banquet, a chance to win a prize, all at one of the most beautiful golf courses, the site of the 1955 U. S. Open Golf Tournament and the coming 1958 U. S. Amateur Golf Tournament and American Cup Matches. The Olympic Club provides two 18-hole courses and is only a short distance from downtown San Francisco. The club professional is John Battini. Dr. Harry N. Hensler, the Director of Golf Play, will supervise all score tabulation. The tournament is limited to 18 holes on either course. The play will start at 8 a. m. and run until 2 p. m. The Yellow Cab Company will provide transportation to and from the course, either singly or up to five persons to a cab. Direction sheets will be available at the A. M. A. registration desks, on request, for those with private transportation. All players should present verification of their home club handicap, signed by their club secretary; otherwise handicap is set by the A. M. G. A. Handicap Committee. No handicaps over 30 are allowed. Dr. Paul S. Wyne, 450 Sutter St., San Francisco, is president of the American Medical Golfing Association and Dr. William R. Smart, 450 Fourth St., San Rafael, Calif., is the tournament chairman. All communications should be directed to Dr. James J. Leary Jr., 450 Sutter St., San Francisco, Calif., secretary of the local committee.

The Olympic Club at San Francisco, where the 42nd American Medical Golfing Association Tournament will be held.

Luncheons, Dinners and Meetings of Fraternity, Alumni and Other Organizations

Alpha Kappa Kappa, Luncheon, Wednesday, June 25, 12:20 p. m., Hotel Whitcomb, Crystal Room. Tickets available from Dr. J. Morrille George, 350 Post St., San Francisco.

American Physicians Fellowship Committee, for the Israel Medical Association, Annual Assembly and Cocktail Party, Monday, June 23, 7 p. m., Concordia-Argonaut Club. Tickets available from Dr. Joseph Levitin, 516 Sutter, San Francisco.

Boston University School of Medicine Alumni Association, Dinner, Wednesday, June 25. Time and place to be announced. Tickets available from Miss Grace Auburn, Alumni office.

Chicago Medical School Alumni Association, Dinne Wednesday, June 25, 6 p. m. Location to be announced

Christian Medical Society, Annual Banquet, Monday, Jun 23, 12 noon. Location to be announced. Tickets availabl from C. M. S. Office, 127 S. Wacker Drive, Chicago.

College of Medical Evangelists Alumni Association, Di ner, Wednesday, June 25, 6:30 p. m., Merchandise Mar Tickets available from Alumni office.

Columbia University College of Physicians and Surgeo (Northern California Alumni Club) Cocktail Party and Di ner, Thursday, June 26, 6 p. m., University Club. Ticke available from Dr. J. S. Somberg, 2490 Channing Wa Berkeley, Calif.

Cornell University Medical College Alumni Association, Luncheon, Tuesday, June 24. Time and location to be announced.

Creighton University Alumni Association, Dinner Dance, Wednesday, June 25, 7 p. m., Mark Hopkins Hotel, Peacock Court. Tickets available from Creighton Medical Committee, 450 Sutter St., Suite 515, San Francisco.

Duke University Medical Alumni Association, Dinner, Wednesday, June 25, 6:30 p. m., St. Francis Yacht Club, Model Room. Tickets available from T. L. Peele, M.D, Box 3811, Duke Hospital, Durham, N. C.

Federation of Catholic Physicians' Guilds, Memorial Mass, Wednesday, June 25, 8 a. m., Notre Dame des Victoires Church, 566 Bush Street. Reception, Wednesday, June 25, 4-6 p. m., Hotel Sir Francis Drake.

Georgetown Medical School, Luncheon, Tuesday, June 24, 12:30 p. m., St. Francis Hotel.

Hahnemann Medical College Alumni Association, Dinner, Wednesday, June 25, 7 p. m., St. Francis Hotel.

Harvard Medical School Alumni Association, Dinner, Wednesday, June 25, 7 p. m., St. Francis Hotel, Mural Room.

Henry Ford Hospital Medical Association, Cocktail Party, Wednesday, June 25, 5:30 p. m., Mark Hopkins Hotel.

Jefferson Medical College Alumni Association, Dinner, Wednesday, June 25, 7:30 p. m., (Cocktails, 6:30 p. m), Clift Hotel.

Johns Hopkins University Alumni Association, Dinner, Wednesday, June 25, 6:30 p. m., University Club. Tickets available from Dr. John N. Callander, 2540 Filbert Street, San Francisco 23.

Loyola University of Chicago Alumni Association, Dinner, Wednesday, June 25, 6:30 p. m., Sheraton Palace, Comstock Room. Tickets available from Alumni office or William G. Schmitz, M.D., 700 25th Avenue, San Francisco 21.

Lutheran Medical Mission Association, Dinner, Wednesday, June 25, 6:30 p. m., Zion Lutheran Church, 9th and Anza. Tickets available from Lutheran Medical Mission Association, 95 Marietta Drive, San Francisco.

Marquette University Alumni Association, Dinner, Wednesday, June 25, Hotel Mark Hopkins. Tickets available from Ray H. Pfau, 620 N. 14th St., Milwaukee.

Mayo Alumni Association, Cocktail Party, Tuesday, June 24, 6:30-8 p. m., St. Francis Hotel. Tickets available from George F. Schmitt, M.D., 30 S.E. 8th St., Miami, Florida.

McGill Graduates Society, Northern California Branch, Dinner, Thursday, June 26, 7 p. m., St. Francis Yacht Club. Tickets available from H. A. Calkins, 5840 St. Paul Court, Oakland 18, Calif.

Northwestern University Alumni Association, Medical Division, Luncheon, Tuesday, June 24, 12:30 p. m., Hotel Canterbury. Tickets available from Alumni office.

Phi Chi Medical Fraternity, Dinner, Thursday, June 26, 7 p. m. (Cocktails, 6:30), St. Francis Hotel, Italian Room.

Phi Delta Epsilon Fraternity, Dinner Dance, Wednesday, June 25, 8 p. m. (Cocktails, 7 p. m.), Fairmont Hotel, Gold Room. Tickets available from Dr. Angelo May, 450 Sutter Street, San Francisco.

Phi Lambda Kappa Fraternity, Luncheon. Time and place to be announced.

Rush Medical College Alumni Association, Luncheon, Tuesday, June 24. Time and place to be announced.

Tickets available from Alumni office or Dr. D. Stuart MacRobbie, 1008 Mariposa Avenue, Berkeley, Calif.

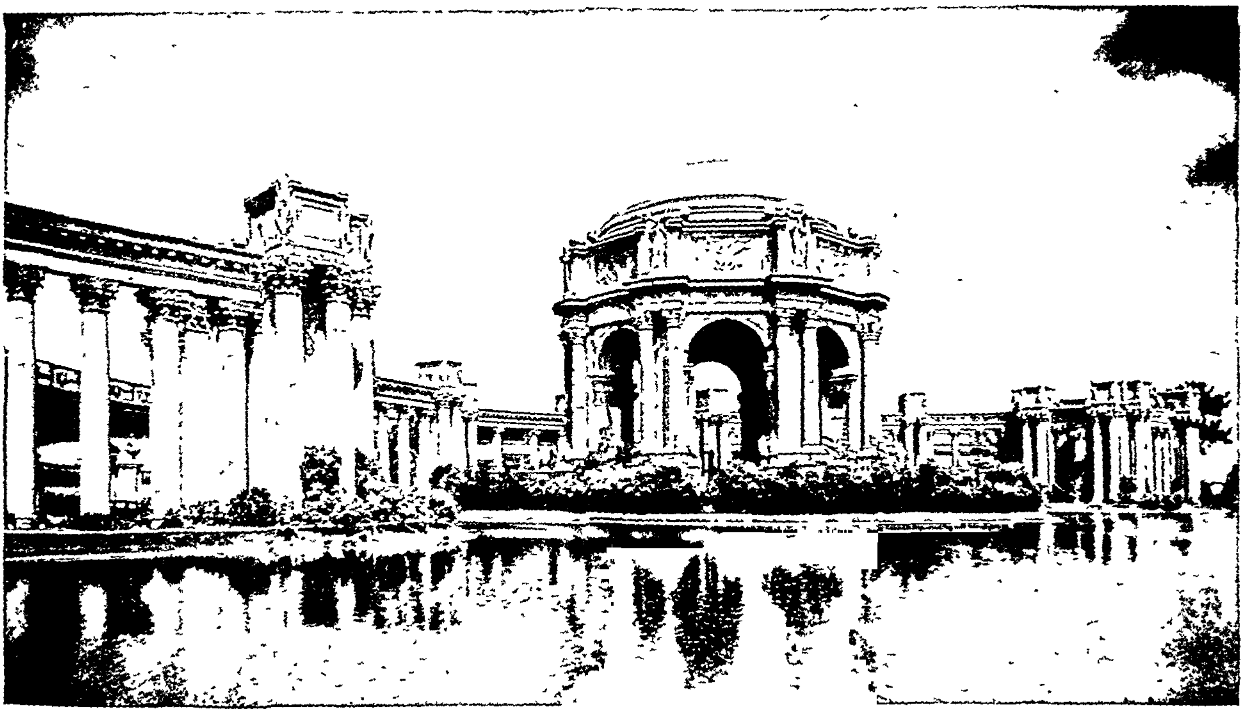
University of Chicago School of Medicine Alumni Association, Cocktails and Dinner, Thursday, June 26, 6:30 p. m., Sheraton-Palace Hotel, Ballroom. Tickets available from Dr. J. Alfred Rider, Western Regional Alumni Office, 717 Market Street, Room 322, San Francisco 3.

University of Kansas Medical Alumni Association, Cocktail Party, Wednesday, June 25, 5-7 p. m., Sir Francis Drake Hotel, Monterey Room.

University of Louisville, Cocktail Party and Dinner, Wednesday, June 25, 7 p. m., The Olympic Club. Tickets available from Dr. Reagan South, 1411 46th Ave., San Francisco.

University of Maryland Alumni, Dinner, Wednesday, June 25, 6:30 p. m. Location to be announced.

University of Nebraska College of Medicine Alumni Association, Luncheon, Tuesday, June 24, 1 p. m., Mark Hopkins Hotel, Golden Empire Room. Tickets available from Alumni office.



San Francisco's Palace of Fine Arts was built for the Panama Pacific International Exposition of 1915. After the Fair, it was deemed too beautiful to destroy and is today the sole reminder of that great event.

St. Louis University School of Medicine Alumni Association, Dinner Dance, Wednesday, June 25, 7 p. m., St. Francis Hotel. Tickets available from Alumni office.

San Francisco Children's Hospital Alumni Association, Tea, Tuesday, June 24, 4 p. m., Nurses Auditorium, Children's Hospital. For details, John N. Callander, M.D., 2540 Filbert Street, San Francisco.

Stanford Medical Alumni Association, Luncheon, Tuesday, June 24, 12:30 p. m., Whitcomb Hotel.

Temple University Medical Alumni, Dinner, Wednesday, June 25, 6:30 p. m., Mark Hopkins Hotel, Conquistador Room.

Tufts University School of Medicine Alumni, Dinner, Wednesday, June 25, 7:30 p. m., Grison's Steak House.

University of Pennsylvania Medical Alumni Society, Dinner, Wednesday, June 25, 7 p. m. (Cocktails, 6 p. m.), Hotel Sir Francis Drake. Tickets available from Alumni office.

Washington University Medical Alumni Association, Cocktail Party and Dinner, Wednesday, June 25, 6 p. m., Canterbury Hotel.

Woman's Auxiliary to the American Medical Association, Tea, Monday, June 23, 3:30-5 p. m., Hotel Fairmont. Luncheons Tuesday and Wednesday, June 24 and 25, 12:30 p. m., Hotel Fairmont.

Woman's Medical College of Pennsylvania Alumnae Association, Dinner, Tuesday, June 24, 6:30 p. m., St. Francis Hotel, Italian Room. Tickets available from Alumnae office.

LOCAL COMMITTEE ON ARRANGEMENTS

General Chairmen

Matthew N. Hosmer
Samuel R. Sherman

Vice Chairman

Robert C. Combs

Secretary

Mrs. Olive M. Neick

General Committee

- Claude P. Callaway
- Donald M. Campbell
- Loren R. Chandler
- W. Dayton Clark
- Lawrence R. Custer
- Dorothy P. Danno
- Roberta Fenlon
- George K. Herzog Jr.
- Herbert C. Moffitt Jr.
- Clayton D. Mote
- Ellsworth Quinlan
- Harold H. Rosenblum
- John B. Schaupp
- William Smart
- Edgar Wayburn
- Eugene M. Webb
- Forrest M. Willett
- A. Justin Williams

Honorary Vice-Chairmen

- Robert C. Ashley
- John Blum
- George J. Budd
- John W. Cline
- Francis J. Cox
- Henry Gibbons III
- Carl E. Horn
- Frank E. Lones
- Frank MacDonald
- Ferrall H. Moore
- Dwight H. Murray
- William B. Smith
- J. Frederic Snyder
- Robertson Ward
- Frank E. West
- Dwight L. Wilbur

Clubs and Alumni Committee

Ellsworth Quinlan, Chairman

- Joseph J. Albrecht
- Pieter A. De Vries
- Joseph Kushner
- Edmund W. Overstreet
- Francis E. West

Entertainment Committee

Harold H. Rosenblum, Chairman

- Ephraim P. Engleman
- Roberto F. Escamilla
- Hilliard J. Katz
- J. Bradley Long

FINANCE COMMITTEE

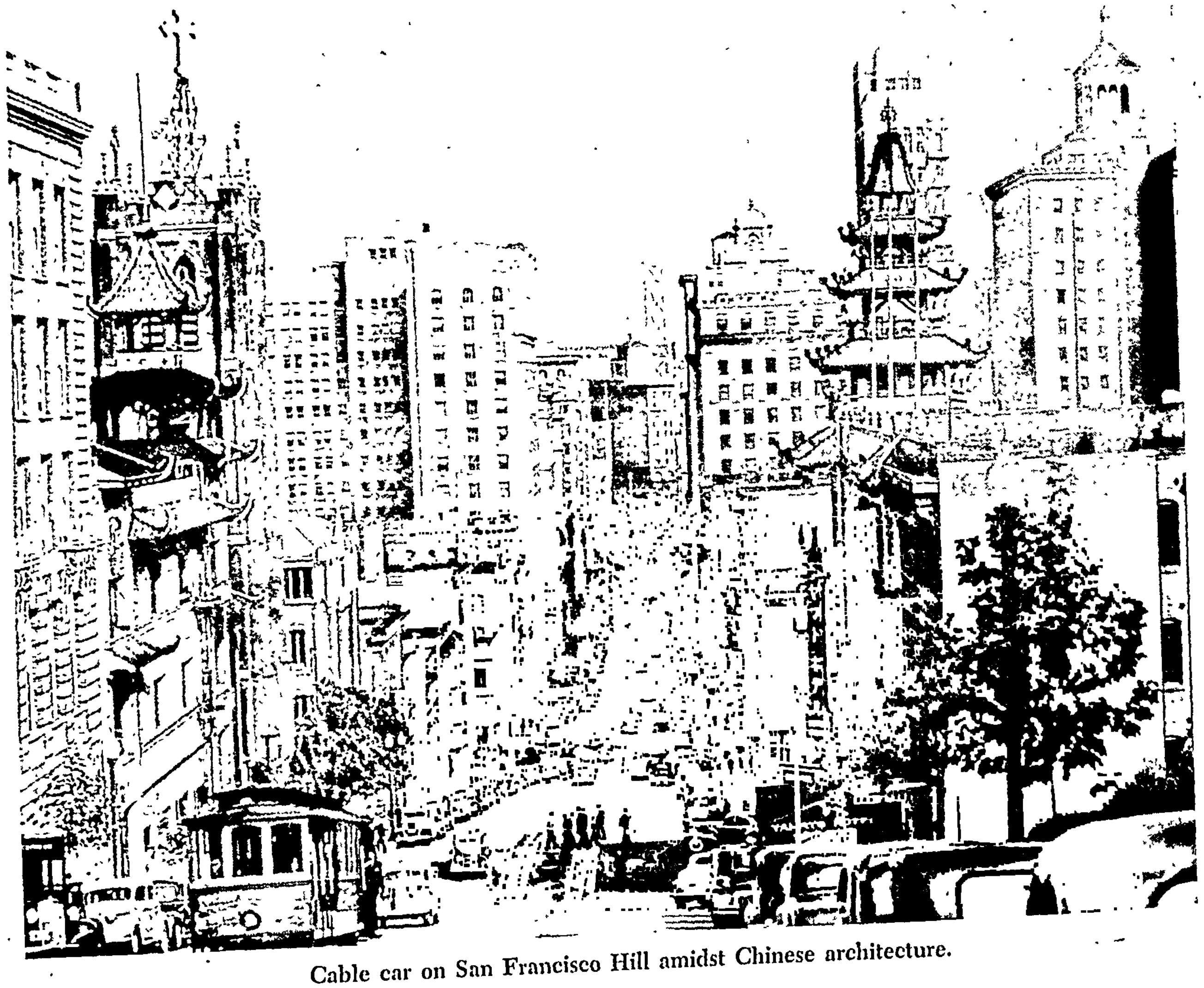
A. Justin Williams, Chairman

- Floyd H. Jergesen
- Leon Michels
- Don C. Musser

Golf Committee

William Smart, Chairman

- Philip H. Arnot
- Dale E. Barber
- Nicholas Bonfilio
- Francis C. Borgnino
- Victor E. Hallstone
- Harrel Lee Harrington
- Harry N. Hensler
- Thomas G. Lawler
- James J. Leary, Jr.
- Colin C. McRae
- O. S. Nesting
- Douglas E. Ramsey
- Felix R. Rossi, Jr.
- Thomas G. Schnoor
- Edward F. Stadtherr
- Edward F. Vollert
- Marion G. Weitz
- Harry D. Williams
- Carl Winternitz
- Paul S. Wyne



Cable car on San Francisco Hill amidst Chinese architecture.

Hotels Committee

Lawrence R. Custer, Chairman

Francis J. Charlton
Edmund J. Mahon
John J. O'Connor
Gregory Smith

House of Delegates Dinner Committee

Clayton D. Mote, Chairman

A. Crawford Bost
Loren R. Chandler
Joseph W. Crawford
Robert Irvine
Hilliard J. Katz
Salvatore P. Lucia
Charles P. Mathe
Charles E. Von Geldern

Registration Committee

W. Dayton Clark, Chairman

James Bennett
Robert Berwick
Arthur Z. Cerf
John R. Gamble
Robert Harvey
Thomas Y. Hum
Herbert N. Jacobs
Robert Merchant
Richard Palmer
Louis A. O'Gara
Jane Schaefer
Kenneth R. Scott
Arthur O. Stone
Walter Tatge
William Turman
George A. Winch

isherman's Wharf . . . Small ships are anchored at the dock after a day's haul. Restaurants alongside serve delicious fish dishes.

President's Reception Committee

Donald M. Campbell and Herbert C. Moffitt, Jr.
Co-Chairmen

William L. Bender
John W. Cline
Roberta Fenlon
Stacy R. Mettier
Edmund J. Morrissey
Benson Roe
Sidney J. Shipman
Robertson Ward
Dwight L. Wilbur

Publicity Committee

Loren R. Chandler, Chairman

Claudius Y. Gates
Miss Mary V. Mulcahey
Malcolm S. M. Watts
Philip R. Westdahl

Television Committee

John B. Schaupp, Chairman

David W. Allen
Margaret Ems
Bert Halter
Chester Herrod
L. N. R. Leonards
Bradford Young

Transportation Committee

Forrest M. Willett, Chairman

Alexander F. Fraser
Robert Gobar
Byron E. Hall
Victor Richards

WOMAN'S AUXILIARY

A cordial invitation is extended to all members of the Woman's Auxiliary to the American Medical Association, their guests and the guests of physicians attending the convention of the American Medical Association, to participate in all social functions and attend the general meetings of the Auxiliary.

Headquarters will be at the Fairmont Hotel. Tickets for the various social functions will be available at the registration desk. The Hospitality Room will be in the Green and Empire Rooms on the first floor.

Please register early and obtain your badge and program.

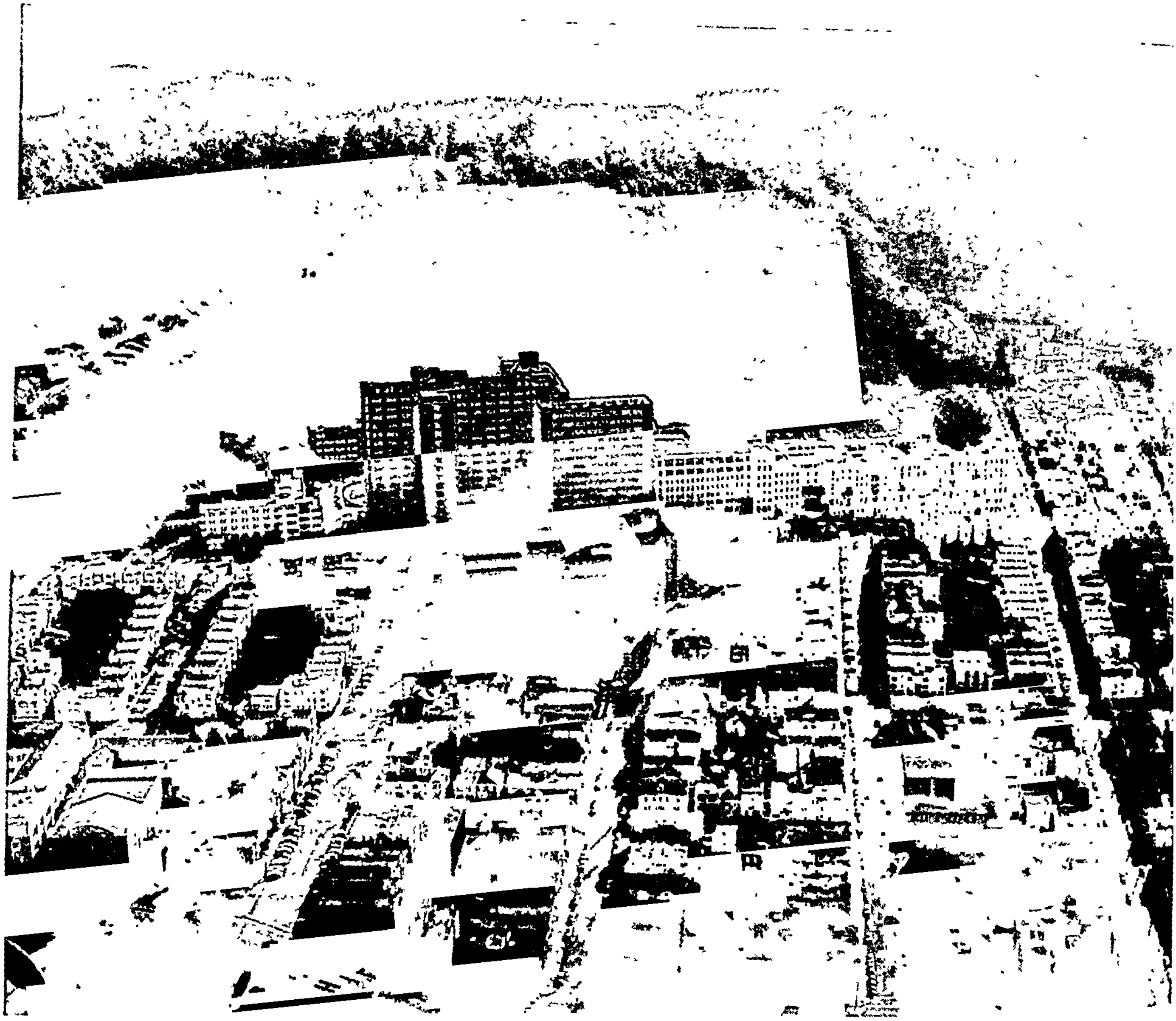
Preconvention Schedule

SATURDAY, JUNE 21

COMMITTEE MEETINGS—FAIRMONT HOTEL

1:00 p. m. Nominating Committee—International Room Mrs. Robert Flanders, Chairman.

4:00 p. m. Finance Committee—President's Suite. Mrs. Jay G. Linn, Chairman



Principal buildings of University of California Medical Center, San Francisco. The two tallest buildings are the Herbert C. Moffitt Hospital (*left*, cross-shaped) and the attached Medical Science Building (*right*, L-shaped). To left of Moffitt is the Langley Porter Neuropsychiatric Institute. At right, attached to the Medical Sciences Building, are the Clinics Building and the original University of California Hospital, which is being rebuilt. Partly visible at rear, are the Surgical Research Laboratories, Radioactivity Center, George Williams Hooper Foundation for Medical Research, and Radiological Laboratory.

Registration Hours

Sunday	12 noon– 4	p. m.
Monday	9 a. m.– 3:30	p. m.
Tuesday	8 a. m.– 4	p. m.
Wednesday	9 a. m.– 4	p. m.
Thursday	9 a. m.–12	noon

SUNDAY, JUNE 22

12:00 noon to 4:00 p. m. Registration, Hospitality and Exhibits–Green and Empire Rooms (First Floor). Members of the Hospitality Committee will welcome members and guests of the Woman's Auxiliary during the convention.

COMMITTEE MEETINGS

2:30 p.m. Resolutions Committee—Far East Room (Mezzanine Floor). Mrs. Jesse D. Hamer, Chairman.

4:00 p.m. Nominating Committee—Far East Room. Mrs. Robert Flanders, Chairman.

7:00 p.m. Revisions Committee—Far East Room. Mrs. William Mackersie, Chairman.

BOARD OF DIRECTORS MEETING AND LUNCHEON

10:30 a.m. Meeting—Far East Room. Mrs. Paul C. Craig, presiding

1:00 p.m. Luncheon—Hunt Room (Mezzanine Floor).

MONDAY, JUNE 23

9:00 a.m. to 3:30 p.m. Registration, Hospitality and Exhibits—Green and Empire Rooms.

ROUND TABLE DISCUSSIONS—MEMBERS INVITED

9:30 a.m. to 12:00 noon Hunt Room (Mezzanine Floor). Mrs. William H. Evans, Fifth Vice President, Chairman.

Procedures:
- Finances—Mrs. Harlan English, Treasurer. Mrs. Jay G. Linn, Finance Secretary
- Revisions—Mrs. William Mackersie, Chairman
- Parliamentary Questions—Mrs. Mason G. Lawson, Parliamentarian
- History—Mrs. George Turner, Chairman
- Report Forms—Mrs. C. Rodney Stoltz, Chairman
- Public Relations—Mrs. Paul E. Rauschenbach, Chairman
- Civil Defense—Mrs. W. W. Hubbard, Chairman
- Mental Health—Mrs. Aaron Margulis, Chairman
- Recruitment—Mrs. L. D. Jacobson, Chairman
- Safety—Mrs. John Wagner, Chairman

9:30 a.m. to 11:00 a.m. California Room (Mezzanine Floor). Mrs. M. A. Gold, Fourth Vice President, Chairman.
- Organization—Mrs. Frank Gastineau, First Vice President and Chairman
- Program—Mrs. Charles Flynn, Chairman

11:00 a.m. to 12:30 p.m. Legislation—Mrs. Charles L. Goodhand, Chairman

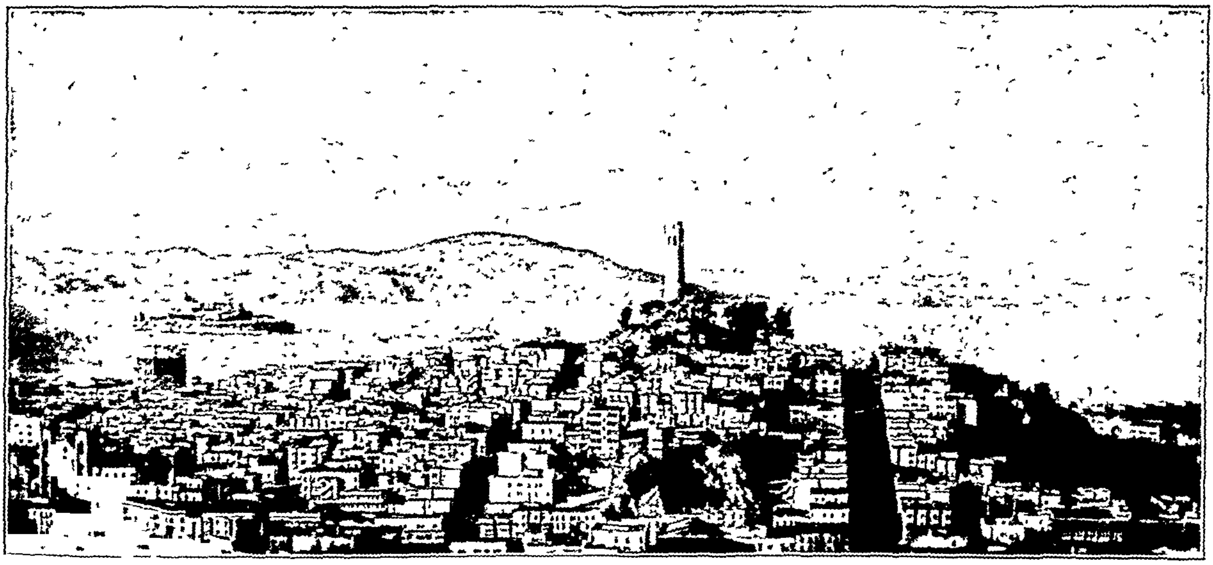
1:30 p.m. to 3:00 p.m. Hunt Room (Mezzanine Floor). Mrs. Ross P. Daniel, Second Vice President, Chairman; Mrs. F. Erwin Tracy, Constitutional Secretary, Moderator.

TEA AND FASHION SHOW—MARK HOPKINS HOTEL, PEACOCK COURT

3:30 p.m. to 5:00 p.m. Honoring Mrs. Paul C. Craig, President, and Mrs. E. Arthur Underwood, President-elect

Special Guests: Members of the National Board of Directors, National Committee Chairmen, State Presidents and Presidents-elect and Wives of Officers and Trustees of the American Medical Association.

Hostesses: Woman's Auxiliary to the California Medical Association



Telegraph Hill with Coit Tower, Alcatraz, and Marin County across the bay.

Compliments of Pfizer Laboratories and J. B. Roerig and Company, Divisions of Chas. Pfizer & Co., Inc.

Admission by ticket only which can be secured at time of registration. Number limited.

Convention Program

TUESDAY, JUNE 24

8:00 a.m. to 4:00 p.m. Registration, Hospitality and Exhibits—Green and Empire Rooms

9:00 a.m. Formal Opening of the 35th Annual Convention of the Woman's Auxiliary to the American Medical Association—Gold Room (Lobby Floor). Mrs. Paul C. Craig, President, presiding.

INVOCATION

Mrs. Edward P. Dennis, President, Woman's Auxiliary to the Medical Society of the State of Pennsylvania.

PLEDGE OF LOYALTY

Mrs. George Turner, Past National President.

GREETINGS

Dr. Matthew N. Hosmer, Chairman, Committee on Arrangements; Dr. Robert Combs, President, San Francisco County Medical Society.

ADDRESS OF WELCOME

Mrs. Leonard D. Offield, Immediate Past President, Woman's Auxiliary to the California Medical Association.

RESPONSE

Mrs. Arthur E. Brown, Immediate Past President, Woman's Auxiliary to the Mississippi State Medical Association.

INTRODUCTIONS

President-elect, Mrs. E. Arthur Underwood; National Directors and Vice Presidents; Convention Chairmen, Mrs. Matthew N. Hosmer, and Mrs. Samuel R. Sherman; Guests.

REPORT OF REGISTRATION

Mrs. Ellis Sox, Chairman

ROLL CALL

MINUTES OF THE THIRTY-FOURTH ANNUAL CONVENTION

Mrs. F. Erwin Tracy, Constitutional Secretary.

PRESENTATION OF CONVENTION AGENDA

CONVENTION RULES OF ORDER

Mrs. Mason G. Lawson, Parliamentarian.

ANNOUNCEMENT OF NATIONAL CONVENTION COMMITTEE APPOINTMENTS

Mrs. Paul C. Craig.

MEMORIAL SERVICE

Mrs. Louis Cohen, Immediate Past President, Woman's Auxiliary to the Kansas Medical Society.

REPORTS OF OFFICERS

President, Mrs. Paul C. Craig.
President-elect, Mrs. E. A. Underwood.
Treasurer (and auditor's report), Mrs. Harlan English.
Constitutional Secretary, Mrs. F. Erwin Tracy.

REPORT OF BOARD OF DIRECTORS

Mrs. Paul C. Craig.

REPORT OF EXECUTIVE SECRETARY

Miss Margaret N. Wolfe.

STATE PROJECTS REPORTS

National Committee Chairmen, moderators.

12:30 p. m.

Luncheon in honor of the Past Presidents of the Woman's Auxiliary to the American Medical Association, Venetian Room (Lobby Floor). Mrs. Paul C. Craig, President, presiding.

Guest Speaker: Mr. Richard H. McFeely, Principal, George School, Bucks County, Pa.

Tickets (including tax and gratuity): $5.00.

2:30 p. m.

STATE PROJECTS REPORTS

National Committee Chairmen, moderators.

REPORTS OF COMMITTEE CHAIRMEN

Bulletin Circulation, Mrs. Edward J. Meister.
Finance, (and presentation of budget for 1958-59), Mrs. Jay G. Linn.
History, Mrs. George Turner.
Publications, Mrs. E. M. Egan.
Revisions, Mrs. William Mackersie.
Organization, Mrs. Frank Gastineau.
Report Forms, Mrs. C. Rodney Stoltz.
Today's Health, Mrs. John M. Chenault.

STORY OF *Today's Health* FUTURE PLANS (lantern slides)

W. W. Hetherington, Publisher; James Liston, Editor.

STATE PROJECTS REPORTS

National Committee Chairmen, moderators.

REPORT OF THE 1958 NOMINATING COMMITTEE

(First Reading) Mrs. Robert Flanders, Chairman.

PRESENTATION OF ELECTION COMMITTEE AND TELLERS

ELECTION OF THE 1959 NOMINATING COMMITTEE

8:00 p. m.

Opening meeting of the American Medical Association—Concert and Rose Rooms, Sheraton-Palace Hotel.

10:00 p. m.

Reception and Ball in Honor of the President of the American Medical Association—Gold Ballroom, Sheraton-Palace Hotel.

WEDNESDAY, JUNE 25

9:00 a. m. to 4:00 p. m. Registration, Hospitality and Exhibits—Green and Empire Rooms.

9:00 a. m. General Meeting of the Woman's Auxiliary to the American Medical Association, Mrs. Paul C. Craig, presiding.

MINUTES

Mrs. F. Erwin Tracy.

CONVENTION ANNOUNCEMENTS

Mrs. Matthew N. Hosmer and Mrs. Samuel R. Sherman.

REPORT OF TELLERS—ELECTION OF THE 1959 NOMINATING COMMITTEE

REVISIONS TO THE CONSTITUTION AND BYLAWS

STATE PROJECTS REPORTS

National Committee Chairmen, moderators.

12:30 p. m.

Luncheon in honor of Mrs. Paul C. Craig and Mrs. E. Arthur Underwood—Peacock Court, Mark Hopkins Hotel. Mrs. Robert Flanders, Past National President, presiding.

Greetings: Dr. Gunnar Gundersen, President, American Medical Association.

Guest Speaker: Dr. David B. Allman, Immediate Past President, American Medical Association.

Presentation of Woman's Auxiliary Contribution to the American Medical Education Foundation: Mrs. Paul C. Craig.

Presentation of A. M. E. F. Awards: Dr. George F. Lull, President, American Medical Education Foundation.

Presentation of Woman's Auxiliary A. M. E. F. Certificates of Achievement: Mrs. Karl F. Ritter, A. M. E. F. Chairman.

Guests of Honor: Dr. David B. Allman, Immediate Past President, American Medical Association; Dr. Gunnar Gundersen, President; Dr. Jesse D. Hamer, Vice President; Dr. George F. Lull, Secretary; Dr. F. J. L. Blasingame, General Manager; Dr. Ernest B. Howard, Assistant Secretary; Dr. J. J. Moore, Treasurer; Dr. E. Vincent Askey, Speaker, House of Delegates; Dr. Louis M. Orr, Vice Speaker; Dr. Austin Smith, Editor; Members of the Board of Trustees: Dr. E. S. Hamilton, Chairman; Dr. R. M. McKeown, Dr. H. H. Hussey, Dr. L. W. Larson, Dr. J. Z. Appel, Dr. Julian Price, Dr. G. M. Fister, Dr. C. A. Nafe, and the wives of officers and trustee members.

Tickets (including tax and gratuity): $5.00.

3:00 p.m. to 4:00 p.m.

PREMIERE RECRUITMENT FILM "Helping Hands for Julie." Gold Room, Fairmont Hotel.

Paramedical careers film made under the direction of the American Medical Association and the American Hospital Association, with the cooperation of Squibb and Company.

Introduction: Dr. Gunnar Gundersen, President, American Medical Association.

Public Invited.

ROUND TABLE DISCUSSIONS—MEMBERS INVITED

4:15 p.m. to 5:30 p.m. Hunt Room—Mrs. Frank Gastineau, First Vice President, Moderator; American Medical Education Foundation, Mrs. Karl F. Ritter, Chairman.

4:15 p.m. to 5:30 p.m. Crystal Room—Mrs. Richard F. Stover, Third Vice President, Chairman; *Today's Health*, Mrs. John M. Chenault, Moderator.

THURSDAY, JUNE 26

9:00 a.m. to 12:00 noon Registration, Hospitality and Exhibits—Empire and Green Rooms.

9:00 a.m. General Meeting of the Woman's Auxiliary to the American Medical Association—Gold Room (Lobby Floor). Mrs. Paul C. Craig, presiding.

MINUTES

Mrs. F. Erwin Tracy.

CONVENTION ANNOUNCEMENTS

Mrs. Matthew N. Hosmer and Mrs. Samuel R. Sherman.

REPORT OF THE CREDENTIALS AND REGISTRATION COMMITTEE

Mrs. Ellis Sox, Chairman.

RESOLUTIONS

Mrs. Jesse D. Hamer.

CONVENTION COURTESY RESOLUTIONS

Mrs. Newell Jones.

ELECTION OF OFFICERS

INSTALLATION OF OFFICERS

Mrs. David B. Allman, Past National President.

PRESENTATION OF PAST PRESIDENT'S PIN

Mrs. Robert Flanders, Past National President.

PRESENTATION OF PRESIDENT'S PIN AND GAVEL

Mrs. Paul C. Craig.

INAUGURAL ADDRESS

Mrs. E. Arthur Underwood.

ADJOURNMENT

2:00 p.m. Meeting of the Board of Directors—20th Century Room (Mezzanine Floor). Mrs. E. Arthur Underwood, President, presiding.

3:30 p.m. Informal Discussion of 1958-59 Committee Programs (Board of Directors and National Committee Chairmen)—20th Century Room. Mrs. E. Arthur Underwood, presiding.

FRIDAY, JUNE 27

9:00 a.m. to 12:00 noon 1958-59 Planning Meeting for National Officers, Directors, Committee Chairmen, State Presidents and Presidents-elect and Chairmen—Garden Room (Lobby Floor). Mrs. E. Arthur Underwood, President, presiding.

"A. M. A. Round-Up": Dr. Ernest B. Howard, Asst. Secretary, American Medical Association.

Informal Discussion of 1958-59 Programs and Projects.

Members cordially invited.

National Convention Committees

Nominating: Mrs. Robert Flanders, Chairman, Mrs. Clark Bailey, Mrs. John M. Chenault, Mrs. V. R. Frederick, Mrs. Leif G. Jensen, Mrs. Lawrence A. Rapee, Mrs. Oscar W. Robinson.

Reading Convention Minutes: Mrs. E. M. Egan, Chairman, Mrs. F. Erwin Tracy, Mrs. Mason G. Lawson, Miss Margaret N. Wolfe.

Resolutions: Mrs. Jesse D. Hamer, Chairman, Mrs. A. J. Baumann, Mrs. Anthony J. Lund, Mrs. Iron Hawthorne Nelson, Mrs. E. Roderick Shipley.

Convention Courtesy Resolutions: Mrs. Newell Jones, Chairman, Mrs. George Covey, Mrs. H. L. Rosen, Mrs. W. C. Stover, Mrs. Maurice G. Sheldon.

Election: Mrs. Jack W. Kennedy, Chairman, Mrs. Joseph V. Chatigny, Mrs. G. Thomas Evans, Mrs. R. T. Unruh, Mrs. Scott L. Walker, Mrs. Luther H. Wolff, Mrs. Robert Locke.

Tellers: Mrs. David W. Boyer, Chairman, Mrs. J. Andrew Bowen, Mrs. John W. Devereux, Mrs. Fred C. Endres, Mrs. John D. Gleckler, Mrs. John C. Voss, Mrs. James E. Wissler.

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PROGRAM OF THE SCIENTIFIC ASSEMBLY

GENERAL SCIENTIFIC MEETINGS

CIVIC AUDITORIUM, POLK HALL

Monday, June 23—2 p. m.

Presiding: CARL A. LINCKE, Carrollton, Ohio
Member of Council on Scientific Assembly

Panel Discussion on Management of the Severely Injured Patient

Moderator: OLIVER COPE, Associate Professor of Surgery, Harvard Medical School, Boston.

2:00 p. m.

1. General Surgical Aspects.
   OSCAR CREECH, Professor of Surgery, Tulane University School of Medicine, New Orleans.
2. Thoracic Aspects.
   E. STANLEY CRAWFORD, Assistant Professor of Surgery, Baylor University College of Medicine, Houston, Texas.
3. Genitourinary Aspects.
   JOHN W. SCHULTE, Assistant Clinical Professor of Urology, University of California School of Medicine, San Francisco.
4. Orthopedic Aspects.
   OTTO E. AUFRANC, Clinical Associate Professor of Orthopedic Surgery, Harvard Medical School, Boston.
5. Neurosurgical Aspects.
   GUY L. ODOM, Professor of Neurosurgery, Duke University School of Medicine, Durham, N. C.
6. Anesthetic Aspects.
   ROBERT A. HINGSON, Professor of Anesthesiology, Western Reserve University School of Medicine, Cleveland.

Tuesday, June 24—9 a. m.

Presiding: HENRY R. VIETS, Brookline, Mass.
Member of Council on Scientific Assembly

Panel Discussion on
A General Review of the Hazards Encountered in the Use of Certain Therapeutic Agents

Moderator: WESLEY W. SPINK, Professor of Medicine, University of Minnesota Medical School and Graduate School, Minneapolis.

9:00 a. m.

A. According to specialties.
   1. Radiology.
      RICHARD H. CHAMBERLAIN, Professor of Radiology, University of Pennsylvania School of Medicine and Graduate School of Medicine, Philadelphia.
   2. Dermatology.
      HAROLD O. PERRY, Section of Dermatology, Mayo Clinic, Rochester, Minn.

B. According to systems.
   1. Gastrointestinal.
      G. GORDON MCHARDY, Clinical Associate Professor of Medicine, Louisiana State University School of Medicine, New Orleans.
   2. Pulmonary.
      WILLIAM B. SHERMAN, Associate Clinical Professor of Medicine, Columbia University College of Physicians and Surgeons, New York.
   3. Hematopoietic.
      MAXWELL M. WINTROBE, Professor of Medicine, University of Utah School of Medicine, Salt Lake City.

C. According to specific agents.
   1. Steroids.
      LAURENCE H. KYLE, Associate Professor of Medicine, Georgetown University School of Medicine, Washington, D. C.
   2. Antibiotics.
      WALLACE E. HERRELL, Lexington Clinic, Lexington, Ky.
   3. Tranquilizers.
      LEO E. HOLLISTER, Chief of Medicine, Veterans Administration Hospital, Palo Alto, Calif.

Tuesday, June 24—12 noon

Presiding: HENRY R. VIETS, Brookline, Mass.
Member of Council on Scientific Assembly

12 noon

The Joseph Goldberger Lecture in Clinical Nutrition: Present Status of Nutritional Deficiency Diseases.

V. P. SYDENSTRICKER, Professor Emeritus of Medicine, Medical College of Georgia, Augusta.

THE PROGRAMS OF THE SECTIONS

OUTLINE OF THE SCIENTIFIC PROCEEDINGS

The following papers are announced to be read before the various sections. The order here is not necessarily the order that will be followed in the Official Program. The Official Program will be similar to the programs issued in previous years and will contain the final program of each section with abstracts of the papers, as well as the scientific exhibits, the program of the Inaugural meeting, and other information. To prevent misunderstandings and protect the interest of advertisers, it is here announced that this Official Program will contain no advertisements. It is copyrighted by the American Medical Association and will not be distributed before the session. A copy will be given to each physician on registration.

SECTION ON ANESTHESIOLOGY

MEETS IN MASONIC TEMPLE, ROOM 1
Van Ness Avenue and Market Street

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Wednesday, June 25—9 a. m.

JOINT MEETING WITH SECTION ON SURGERY, GENERAL AND ABDOMINAL, IN VETERANS WAR MEMORIAL, AUDITORIUM

Civic Center

Symposium and Panel Discussion on Spinal Anesthesia

The Pharmacology of Compounds Used to Produce Spinal Anesthesia.
R. M. FEATHERSTONE, Iowa City.

The Present Status of Spinal Anesthesia.
NICHOLAS M. GREEN, New Haven, Conn.

Spinal Anesthesia from the Surgeon's Standpoint.
ROBERT A. SCARBOROUGH, San Francisco.

Spinal Anesthesia, Arachnoiditis, and Paraplegia.
SAMUEL I. JOSEPH and J. S. DENSON, Los Angeles.

Is Heat Sterilization of Drugs and Equipment for Regional Block Anesthesia a Necessity?
L. DONALD BRIDENBAUGH JR., Seattle.

The Electromyogram in the Evaluation of Neurological Complication of Spinal Anesthesia.
A. A. MARINACCI and CYRIL B. COURVILLE, Los Angeles.

Discussion and question and answer period.

Wednesday, June 25—2 p. m.

BUSINESS MEETING; PRESENTATION OF RESOLUTIONS; REPORT OF DELEGATE; INTRODUCTION OF EXHIBITORS

MASONIC TEMPLE, ROOM 1
Van Ness Avenue and Market Street

Recent Evaluation of the Treatment of Tetanus at Indiana University Medical Center.
V. K. STOELTING and C. L. MILLER, Indianapolis.

Anileridine—Its Clinical Use as an Analgesic and Hypnotic: A Preliminary Report.
ROBERT C. THERIEN, LEROY W. LEE, EDWARD M. MALASHOCK, and NEAL B. DAVIS, Omaha.

Promethazine in Surgery and Obstetrics.
MILTON H. ADELMAN, PHILIP A. LIEF, ELLIOTT JACOBSON, and SEYMOUR A. MILLER, New York.

The Control of Postoperative Nausea and Vomiting with Cyclizine (Marezine®) Following Intraocular Surgery.
PAUL A. LORHAN, Kansas City, Kan.

The Place of Regional Anesthesia in Surgical Practice: A Reappraisal.
JOHN J. BONICA, Tacoma, Wash.

2-Chloroprocaine (Nesacaine)—Its Relative Non-toxicity as Demonstrated by Epidural Anesthesia.
F. PAUL ANSBRO, ALBERT E. BLUNDELL, JOHN W. PILLION, and ROBERT E. FURLONG, Brooklyn, N. Y.

Absorption of Local Anesthetics and Relationship to Systemic Toxicity.
JOHN ADRIANI and DONOVAN CAMPBELL, New Orleans

Thursday, June 26—2 p. m.

BUSINESS MEETING; ELECTION OF OFFICERS

Chairman's Address: The Problem of Cardiac Arrest.
KENNETH C. MCCARTHY, Toledo, Ohio.

Balanced Analgesia for the Poor Risk Thoracic Surgical Patient.
CRISOSTOMO C. SANTOS and ROBERT B. SWEET, Ann Arbor, Mich.

The Muscular Reaction to the Resistance of Breathing Apparatus During General Anesthesia.
B. RAYMOND FINK, S. H. NGAI, and D. A. HOLADAY, New York.

Manual and Mechanical Control of Ventilation During Cyclopropane Anesthesia.
M. R. WESTER, J. C. ERICKSON, E. M. GREISHEIMER, and L. W. KRUMPERMAN, Philadelphia.

E. E. G. Patterns During Intracardiac Surgery Using the Cardiopulmonary By-Pass: A Comparison of the Effect of Different Anesthetic Agents.
EVA M. KAVAN, VERNE L. BRECHNER, RICHARD D. WALTERS, and JAMES V. MALONEY, Los Angeles.

The Comparative Effects of Anesthetic Agents on Cardiac Irritability During Hypothermia.
JOHN E. STEINHAUS and KARL L. SIEBECKER, Madison, Wis.

Complications of Endotracheal Intubation.
WILLIAM HAMELBERG, C. MERLE WELCH, JOHN SIDDALL, and JAY JACOBY, Columbus, Ohio.

SECTION ON DERMATOLOGY

MEETS IN CALIFORNIA MASONIC MEMORIAL TEMPLE, AUDITORIUM
California and Taylor Streets

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Tuesday, June 24—2 p. m.

BUSINESS MEETING

Chairman's Address: Pruritus Ani et Vulvae.
Earl D. Osborne, Buffalo.

Symposium and Panel Discussion on Pruritus Ani Et Vulvae and Other Dermatoses of the Anogenital Area

Moderator: Leslie M. Smith, El Paso, Texas.

Anogenital Pruritus in Proctology.
Walter A. Fansler, Minneapolis.

Anogenital Pruritus in Gynecology.
William M. Wilson, Portland, Ore.

Discussion and question and answer period.

Earl D. Osborne, Walter A. Fansler, William M. Wilson, and Leslie M. Smith.

Wednesday, June 25—2 p. m.

ELECTION OF OFFICERS

Keratosis Follicularis Serpiginosa (Lutz); Elastoma Intrapapillare Perforans Verruciforme (Miescher)—First United States Report.
Joseph M. Hitch, Raleigh, N. C., and Herbert Z. Lund, Greensboro, N. C.
Discussion to be opened by Carl W. Laymon, Minneapolis.

Distinguished Lecture in Dermatology: The Importance of Morphologic Diagnosis in Dermatology.
Francis E. Senear (deceased), Chicago.

The Pathogenesis of Superficial Fungus Infections in Cultured Human Skin.
Harvey Blank, S. Sagami, Carolyn Boyd, and Frank J. Roth, Miami, Fla.
Discussion to be opened by J. Walter Wilson, Los Angeles.

Gamma Globulin Therapy in Chronic Staphylococcic Dermatoses.
William J. Morginson, Don C. Wood, and Lurrine Burgess, Salt Lake City.
Discussion to be opened by Henry M. Lewis, Denver.

Value of Patch Tests in Dermatologic Diagnosis with Special Study of Follicular Reactions.
S. William Becker, and Michael P. O'Brien, Long Beach, Calif.
Discussion to be opened by Donald J. Birmingham, Cincinnati.

Congenital Branchiogenic Anomalies.
Paul H. Jacobs, Washington, D. C.; June C. Shafer, Arlington, Va.; and Robert S. Higdon, Washington, D. C.
Discussion to be opened by Robert F. Tilley, Brookline, Mass.

Oral Prophylaxis Against Poison Ivy Dermatitis with Aqua Ivy Tablets (Alum Precipitated Pyridine Ivy Extract): A Controlled Experiment and Preliminary Report.
Robert J. Langs, Bronx, N. Y., and Margaret B. Strauss, New York.
Discussion to be opened by Norman B. Kanof, New York.

Thursday, June 26—2 p. m.

Adverse Reactions to Sulfamethoxypyridazine (Kynex): Results in the Treatment of Dermatitis Herpetiformis.
Harold O. Perry and Richard K. Winkelmann, Rochester, Minn.
Discussion to be opened by Harold M. Johnson, Honolulu.

Immunologic Aspects of Herpes Simplex, Herpes Zoster, and Vaccinia.
G. Douglas Baldridge, Beverly Hills, Calif.
Discussion to be opened by Arthur B. Kern, Providence, R. I.

The Biologic False-Positive Phenomenon in a Lower Socioeconomic Group.
George W. Waring Jr., Alfred S. Lanes, and Herbert Mescon, Boston.
Discussion to be opened by Sidney Olansky, Durham, N. C.

Treatment of Acne Vulgaris with Tetracycline: A Four-Year Study.
M. Allen Forbes Jr., and William C. King, Austin, Texas.
Discussion to be opened by R. C. V. Robinson, Baltimore.

Treatment of Acne with Long-Term Continuous Abrasion.
Rose B. Saperstein, Los Angeles.
Discussion to be opened by Ralph Luikart II, Santa Barbara, Calif.

Fibrin Foam Treatment of Scars—Three and One-Half Years' Experience.
Arthur S. Spangler, Boston.
Discussion to be opened by S. William Levy, San Francisco.

INSTALLATION OF OFFICERS

SECTION ON DISEASES OF THE CHEST

MEETS IN CALIFORNIA MASONIC MEMORIAL TEMPLE, AUDITORIUM

California and Taylor Streets

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Wednesday, June 25—8:30 a. m.

BUSINESS MEETING

Opening Address: Non-mentionables in Coronary Disease.
John F. Briggs, St. Paul.

Multiple Carcinoma of the Lung.
Alfred Goldman, Beverly Hills, Calif.

Variations in Human Response to Antituberculosis Treatment.
Roger S. Mitchell, Dick K. Riemensnider, and J. Carroll Bell, Denver.

Treatment of Slow Heart Rates and Episodes of Cardiac Arrest. Samuel Bellet, Philadelphia.

Host Hazards of So-called Benign Intrathoracic Tumors.
Richard H. Overholt and Wilford B. Neptune, Boston.

Regulation of the Pulmonary Ventilation in Pulmonary Emphysema: Priority of Respiratory Effort over the Respiratory Center. Alvan L. Barach, New York.

Panel Discussion on the Application of Cardiopulmonary Physiology to Medical Practice

Moderator: Edwin R. Levine, Chicago.

What May Be Expected from Cardiopulmonary Function Tests. George R. Meneely, Nashville, Tenn.

Physiologic Concepts in the Treatment of the Failing Heart.
George A. Hellmuth, Milwaukee.

Physiologic Basis of Therapy for the Patient with Increasing Dyspnea. Maurice S. Segal, Boston.

Thursday, June 26–9 a. m.

JOINT MEETING WITH THE SECTION ON RADIOLOGY IN CALIFORNIA MASONIC MEMORIAL TEMPLE, AUDITORIUM

California and Taylor Streets

Symposium on Intrathoracic Lesions with Neurologic Manifestations

Moderator. Harold O. Peterson, Minneapolis.

Internist. Herman J. Moersch, Rochester, Minn.

Radiologists.
Leo H. Garland, San Francisco, and J. Paul Medelman, St. Paul.

Surgeons.
William M. Tuttle, Detroit, and Edwin B. Boldrey, San Francisco.

Symposium on Abnormalities of the Heart and Great Vessels

Moderator: Conrad R. Lam, Detroit.

Internist. J. Francis Dammann Jr., Charlottesville, Va.

Radiologists.
Charles T. Dotter, Portland, Ore., and Bernard J. O'Loughlin, Los Angeles.

Surgeons.
Denton A. Cooley, Houston, Texas, and Ormand C. Julian, Chicago.

Friday, June 27–9 a. m.

JOINT MEETING WITH THE SECTION ON GENERAL PRACTICE IN CIVIC AUDITORIUM, POLK HALL

Panel Discussion on Bronchopulmonary Obstruction in Children

Moderator: Roy F. Goddard, Albuquerque, N. Mex.

Some Physiologic Aspects of Treatment.
Stephen W. Royce, Los Angeles.

The Use of Aerosols. Gordon E. Gibbs, Omaha.

Bronchial Hygiene. Paul H. Holinger, Chicago.

Symposium on Pediatric Cardiology

Moderator: Benjamin M. Gasul, Chicago.

Salient Points in the Roentgenologic Diagnosis of Heart Disease in Infants and Children.
Leo G. Rigler, Los Angeles.

Salient Points in the Electrocardiographic Diagnosis of Heart Disease in Infants and Children.
Robert F. Ziegler, Detr

Salient Points in the Angiocardiographic Diagnosis of Heart Disease in Infants and Children.
Israel Steinberg, New York

Salient Points in the Use of Cardiac Catheterization in the Diagnosis of Heart Disease in Infants and Children.
Daniel Downing, Philadelph

The Use of the Stethoscope in the Diagnosis of Heart Disease in Infants and Children
Benjamin M. Gasul, Chicago

The Selection of Patients for Cardiac Surgery for Infants and Children. Egbert H. Fell, Chicago

SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

MEETS IN HIGH SCHOOL OF COMMERCE, AUDITORIUM

Franklin and Hayes Streets

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Delegate—Edgar V. Allen, Rochester, Minn.
Representative to Scientific Exhibit—Joseph F. Ross, Los Angeles.
Executive Committee—Thomas Findley, Augusta, Ga., Harry F. Dowling, Chicago; George E. Burch, Elliot V. Newman; and Edgar V. Allen.

Wednesday, June 25–9 a. m.

Chairman's Address. George E. Burch, New Orleans

George Minot Lecture: Immunologic Mechanisms in Hematologic Disorders. Carl V. Moore, St. Louis

Symposium on Practical Clinical Physiology of Pulmonary Disease

Causes and Differential Functional Diagnosis of Cyanosis o Cardiopulmonary Origin.
Julius H. Comroe Jr., San Francisco

Physiologic Considerations in the Diagnosis and Treatmen of Ventilatory Insufficiency.
Ward S. Fowler and R. Drew Miller, Rochester Minn.

Recognition and Treatment of Cardiovascular Complication of Chronic Lung Disease. Giles F. Filley, Denver

Panel discussion and question and answer period

George E. Burch, Chairman; Julius H. Comroe Jr Ward S. Fowler; and Giles F. Filley.

Thursday, June 26–9 a. m.

BUSINESS MEETING; ELECTION OF OFFICERS

Symposium on the Clinical Application of the Artificial Kidney

The Present Status of the Use of Artificial Kidneys in Rel tion to Other Methods.
W. J. Kolff and W. A. Keleman, Clevelan

Discussion to be opened by Frank H. Carter, S Diego, Calif.

Management of Patients with Atypical or Unusual Types Renal Insufficiency.
Charles H. Burnett, Chapel Hill, N.

Discussion to be opened by Frank T. Maher, Rochester, Minn.

Present and Future Problems in the Management of Renal Failure. John P. Merrill, Boston.
Discussion to be opened by Peter F. Salisbury, Los Angeles.

The Use of Hemodialysis in Acute Poisonings. George E. Schreiner, Washington, D. C.
Discussion to be opened by John E. Kiley, New York.

Intestinal Lavage and Peritoneal Dialysis Methods. Paul R. Schloerb, Kansas City, Kan.
Discussion to be opened by Warren R. Guild, Boston.

General Discussion.

Thursday, June 26—2 p. m.

JOINT MEETING WITH SECTION ON INTERNAL MEDICINE IN THE [illegible] OF [illegible] AUDITORIUM

Symposium on Recent Advances in the Knowledge of the Causes of Edema and in Diuretic Therapy

The Regulation of Water Balance and Plasma Sodium Concentration. Robert W. Berliner, Bethesda, Md.

Current Status of Aldosterone in the Etiology of Edema. [illegible] E. Lieberman and John A. Luetscher Jr., San Francisco.

Aldosterone Antagonists. Grant W. Liddle, Nashville, Tenn.

Nonmercurial Organic Diuretics: Their Action and Application. Karl H. Beyer Jr., West Point, Pa.

Mercurial Diuretics: Their Mechanism of Action and Clinical Application. C. Thorpe Ray, New Orleans.
Discussion to be opened by Albert A. Kattus, Los Angeles, and David A. Rytand, San Francisco.

Final Discussion by speakers and discussants.

SECTION ON GASTROENTEROLOGY AND PROCTOLOGY

MEETS IN VETERANS WAR MEMORIAL AUDITORIUM

Civic Center

OFFICERS OF SECTION

Chairman—Everett D. Kiefer, Boston.
Vice-Chairman—A. W. Martin Marino, Brooklyn, N. Y.
Secretary—William H. Dearing, Rochester, Minn.
Delegate—Stuart T. Ross, Garden City, N. Y.
Representatives to Scientific Exhibit—William H. Bernstein, Buffalo, and George Gordon McHardy, New Orleans.
Executive Committee—Lowell D. Snorf, Evanston, Ill.; Robert A. Scarborough, San Francisco; Everett D. Kiefer; William H. Dearing, and Stuart T. Ross.

Tuesday, June 24—2 p. m.

The Role of Exfoliative Cytology in the Diagnosis of Cancer of the Digestive Tract. Howard F. Raskin, Chicago.

Present Concepts Regarding the Medical Management of Chronic Ulcerative Colitis. Joseph B. Kirsner, Chicago.

Present-Day Experience with the Surgical Management of Chronic Ulcerative Colitis. Rupert B. Turnbull Jr., Cleveland.

Symposium on Pancreatitis

Experimental Aspects of Pancreatitis. Morton I. Grossman, Los Angeles.

Medical Aspects of Pancreatitis. Thomas E. Machella, Philadelphia.

Surgical Aspects of Pancreatitis. John M. Waugh, Rochester, Minn.

Panel Discussion on Pancreatitis

Moderator: Dwight L. Wilbur, San Francisco

Participants: Morton I. Grossman, Los Angeles; William A. Knight, St. Louis; Thomas E. Machella, Philadelphia; H. Marvin Pollard, Ann Arbor, Mich., and John M. Waugh, Rochester, Minn.

Wednesday, June 25—2 p. m.

BUSINESS MEETING

Chairman's Address: Radiation Therapy for Stomal Ulcer Occurring After Subtotal Gastrectomy. Everett D. Kiefer, Boston.

Functioning Carcinoid Tumor. William G. Sauer, Rochester, Minn.

Extrahepatic Complications in Cirrhosis of the Liver. H. Marvin Pollard, Ann Arbor, Mich.

Symposium on Modern Concepts of Intrahepatic Obstructive Jaundice

Clinical Aspects of Intrahepatic Obstructive Jaundice. Fred W. Hoffbauer, Minneapolis.

Physiology of Biliary Secretion. Ralph W. Brauer, San Francisco.

Application of Liver Function Tests to Intrahepatic Obstructive Jaundice. Frank D. Mann, Phoenix, Ariz.

Pathology of Intrahepatic Obstructive Jaundice. Hans Popper, New York.

Panel Discussion on Intrahepatic Obstructive Jaundice

Moderator: Albert M. Snell, Redwood City, Calif.

Participants: Fred W. Hoffbauer, Minneapolis; Ralph W. Brauer, San Francisco; Frank D. Mann, Phoenix, Ariz., and Hans Popper, New York.

Thursday, June 26—2 p. m.

Panel Discussion on Management of Complications of Duodenal Ulcer

Moderator: William P. Longmire, Los Angeles.

Participants: John W. Baker, Seattle; Sara Jordan, Boston; Joseph B. Kirsner, Chicago; Leo G. Rigler, Los Angeles, and Waltman Walters, Rochester, Minn.

SECTION ON GENERAL PRACTICE

MEETS IN CIVIC AUDITORIUM, POLK HALL

OFFICERS OF SECTION

Chairman—Charles E. McArthur, Olympia, Wash.
Vice-Chairman—S. A. Garlan, New York.
Secretary—E. I. Baumgartner, Oakland, Md.
Delegate—Lester D. Bibler, Indianapolis.
Representative to Scientific Exhibit—I. Phillips Frohman, Washington, D. C.

Executive Committee—I. Phillips Frohman, Washington, D. C.; George I. Thorpe, Wichita, Kan.; Charles E. McArthur; E. I. Baumgartner; and Lester D. Bibler.

Wednesday, June 25—8:45 a. m.

BUSINESS MEETING; REPORT OF DELEGATE; INTRODUCTION OF RESOLUTIONS.

Panel Discussion on Arthritis, 1958

Moderator: John W. Sigler, Detroit.

Participants: Ephraim P. Engleman, San Francisco; Donald F. Hill, Tucson, Ariz.; L. Maxwell Lockie, Buffalo; and Howard F. Polley, Rochester, Minn.

Panel Discussion on Psychiatric Emergencies in General Practice

Moderator: Charles E. Goshen, Washington, D. C.

Participants: Richard H. Gwartney, San Bernardino, Calif.; Alfred Auerback and Samuel W. Nelken, San Francisco.

Thursday, June 26—8:45 a. m.

ELECTION OF OFFICERS

Chairman's Address: The Physician Himself.
Charles E. McArthur, Olympia, Wash.

Symposium on the Newer Diuretics—Especially Chlorothiazide—Indications and Reported Use

General Use and Human Pharmacology of Chlorothiazide.
John H. Moyer and John R. Beem, Philadelphia.

Chlorothiazide in Hypertension.
Edward D. Freis, Washington, D. C.

Therapy in Congestive Heart Failure with Chlorothiazide.
John W. Keyes, Detroit.

Diuretics and Premenstrual Tension.
Robert B. Greenblatt and Edwin C. Jungck Augusta, Ga.

Uses and Abuses of Tissue Committees.
Paul G. Henley, El Dorado, Ark.; R. B. Robins, Camden, Ark.; and Kenneth R. Duzan, El Dorado, Ark.

Treatment of Coronary Artery Disease by Internal Mammary Artery Implantation.
Arthur Vineberg, Montreal, and James H. Walker, Charleston, W. Va.

Results of a Ten-Year Program for the Treatment of Atherosclerosis.
Lester M. Morrison and Theodore L. Clemens, Los Angeles.

Cervical Whiplash Injury.
George S. Hackett, Canton, Ohio.

Friday, June 27—9 a. m.

JOINT MEETING WITH THE SECTION ON DISEASES OF THE CHEST IN CIVIC AUDITORIUM, POLK HALL

Panel Discussion on Bronchopulmonary Obstruction in Children

Moderator: Roy F. Goddard, Albuquerque, N. Mex.

Some Physiologic Aspects of Treatment.
Stephen W. Royce, Los Angeles.

The Use of Aerosols. Gordon E. Gibbs, Omaha.

Bronchial Hygiene. Paul H. Holinger, Chicago.

Symposium on Pediatric Cardiology

Moderator: Benjamin M. Gasul, Chicago.

Salient Points in the Roentgenologic Diagnosis of Heart Disease in Infants and Children.
Leo G. Rigler, Los Angeles

Salient Points in the Electrocardiographic Diagnosis of Heart Disease in Infants and Children.
Robert F. Ziegler, Detroit.

Salient Points in the Angiocardiographic Diagnosis of Heart Disease in Infants and Children.
Israel Steinberg, New York.

Salient Points in the Use of Cardiac Catheterization in the Diagnosis of Heart Disease in Infants and Children.
Daniel Downing, Philadelphia.

The Use of the Stethoscope in the Diagnosis of Heart Disease in Infants and Children.
Benjamin M. Gasul, Chicago.

The Selection of Patients for Cardiac Surgery for Infants and Children. Egbert H. Fell, Chicago.

SECTION ON INTERNAL MEDICINE

MEETS IN HIGH SCHOOL OF COMMERCE, AUDITORIUM

Franklin and Hayes Streets

OFFICERS OF SECTION

Chairman—Albert M. Snell, Palo Alto, Calif.
Vice-Chairman—Thomas P. Findley Jr., Augusta, Ga.
Secretary—Rudolph H. Kampmeier, Nashville, Tenn.
Delegate—Charles T. Stone Sr., Galveston, Texas.
Representative to Scientific Exhibit—Henry T. Ricketts, Chicago.
Executive Committee—Henry M. Thomas Jr., Baltimore, A. Carlton Ernstene, Cleveland; Albert M. Snell; Rudolph H. Kampmeier; and Charles T. Stone Sr.

Tuesday, June 24—2 p. m.

Results of Mitral Commissurotomy: A Three and One-Half to Seven Year *Follow-up Study*.
F. Henry Ellis Jr., Daniel C. Connelly, John W. Kirklin, and Robert L. Parker, Rochester, Minn.
Discussion to be opened by Robert A. Bruce, Seattle.

The Management of Arteriosclerosis Obliterans of the Extremities.
Fay A. LeFevre, Alfred W. Humphries, and Victor G. deWolfe, Cleveland.
Discussion to be opened by Travis Winsor, Los Angeles.

Clinical and Laboratory Features of Malignant Carcinoid.
Albert Sjoerdsma, Bethesda, Md.
Discussion to be opened by John J. Sampson, San Francisco.

The Billings Lecture: *Relationships,* Established and Prospective, Between Viruses and Cancer.
Wendell M. Stanley, Berkeley, Calif.

Panel Discussion on Management of Cardiac Arrhythmias

Moderator: Maurice Sokolow, San Francisco.

Participants: Samuel Bellet, Philadelphia; Edward Massie, St. Louis; Gordon K. Moe, Syracuse, N. Y.; and George E. Burch, New Orleans.

Wednesday, June 25—2 p. m.

ELECTION OF OFFICERS

Comparison of Clinical and Physiological Changes in Acute Pneumonias.
Ellard M. Yow, Edwin M. Ory, Robert D. Leachman, and James K. Alexander, Houston, Texas.
Discussion to be opened by Lowell A. Rantz, San Francisco.

xperience with Amphotericin-B for the Treatment of Deep Mycotic Infections.
John H. Seabury and Harry E. Dascomb, New Orleans.
Discussion to be opened by Charles E. Smith, Berkeley, Calif.

The Diagnostic Value of Punch Biopsy of the Knee Synovium.
William M. Mikkelsen, C. W. Castor, H. A. Zevely, I. F. Duff, and A. J. French, Ann Arbor, Mich.
Discussion to be opened by Howard F. Polley, Rochester, Minn.

Chairman's Address: The Education of an Internist.
Albert M. Snell, Palo Alto, Calif.

Panel on Hemolytic Anemias—Mechanisms and Management

Moderator: Maxwell M. Wintrobe, Salt Lake City.

Participants: Ernest Beutler, Chicago, William H. Crosby, Washington, D. C.; Arno G. Motulsky Seattle, and William B. Castle, Boston.

Thursday, June 26—2 p. m.

JOINT MEETING WITH THE SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS IN HIGH SCHOOL OF COMMERCE, AUDITORIUM

Symposium on Recent Advances in the Knowledge of the Causes of Edema and in Diuretic Therapy

The Regulation of Water Balance and Plasma Sodium Contration. Robert W. Berliner, Bethesda, Md.

Current Status of Aldosterone in the Etiology of Edema.
Amos H. Lieberman and John A. Luetscher Jr., San Francisco.

Aldosterone Antagonists.
Grant W. Liddle, Nashville, Tenn.

Nonmercurial Organic Diuretics: Their Action and Application. Karl H. Beyer Jr., West Point, Pa

Mercurial Diuretics: Their Mechanism of Action and Clinical Application. C. Thorpe Ray, New Orleans
Discussion to be opened by Aabert A. Kattus, Los Angeles, and David A. Rytand, San Francisco.

Panel discussion by speakers and discussants.

SECTION ON LARYNGOLOGY, OTOLOGY, AND RHINOLOGY

MEETS IN THE MASONIC TEMPLE, BLACK ROOM

Van Ness Avenue and Market Street

OFFICERS OF SECTION

Chairman—Alden H. Miller, Los Angeles.
Vice-Chairman—Lester Brown, Atlanta, Ga.
Secretary—Hugh A. Kuhn, Hammond, Ind.
Delegate—Gordon F. Harkness, Davenport, Iowa.
Representative to Scientific Exhibit—Walter E. Heck, San Francisco.
Executive Committee—John R. Lindsay, Chicago; Gordon D. Hoople, Syracuse, N. Y.; Alden H. Miller; Hugh A. Kuhn; and Gordon F. Harkness.

Wednesday, June 25—9 a. m.

Guest of Honor's Address.
Guy L. Boyden, Portland, Ore.

Three Case Reports

1. Congenital Choanal Atresia: Report of Three Cases in One Family. Robert G. MacLean, San Francisco.
2. Treatment of Lateral Nasal Wall Tumors Through Lateral Rhinotomy Approach.
Bernard M. Kramer, San Francisco.
3. Oto-Toxicity of Neomycin.
Glenn J. Greenwood, Los Angeles.

Mr. Chronic Otitis Media Meets the Radiologist.
W. E. Compere Jr., Los Angeles.
Discussion to be opened by J. G. Conti Jr., and William F. House, Los Angeles.

Panel Discussion on Practical Office Otolaryngology

Moderator: Rea E. Ashley, San Francisco.

Participants: Guy A. Owsley, Hartford City, Ind., French K. Hansel, St. Louis; and Victor Goodhill, Los Angeles.

Panel Discussion on Noise: Is it a Health Problem?

Moderator: Aram Glorig, Los Angeles.

Participants: Thrift G. Hanks, Seattle; Alvin Davis, Cincinnati; and Paul T. Whitaker, Milwaukee.

Thursday, June 26—9 a. m.

Laryngofissure: Indications and Technics.
John C. Lillie, Rochester, Minn.
Discussion to be opened by David Downs DeWeese, Portland, Ore , and Theodore J. Hughes, Riverside, Calif.

Tympanoplasty: Reconstruction of the Middle Ear Sound Conduction Mechanism.
Frederick R. Guilford, Houston, Texas.
Discussion to be opened by Miles L. Lewis Jr., New Orleans, and Houston L. Bell, Roanoke, Va.

Oral Diagnosis of Systemic Disease.
Eugene S. Hopp, San Francisco.
Discussion to be opened by Richard Barton, Beverly Hills, Calif., and Glenn J. Greenwood, Los Angeles.

Panel Discussion on Deafness in Children, Etiology, Diagnosis and Management

Moderator: John F. Tolan, Seattle.

Participants: E. Gordon McCoy, Martin Gershman, Mary C. Thompson, and Richard F. Dixon, San Francisco.

BUSINESS MEETING

Friday, June 27—9 a. m.

Case Report: Squamous Papilloma of the Nose.
Robert B. Truckey, San Francisco.

The Value of Self-Inflation of the Middle Ear.
Aubrey G. Rawlins, San Francisco.
Discussion to be opened by Kenneth L. Craft, Indianapolis.

Cancer of the Larynx.
William M. S. Ironside, Chicago.
Discussion to be opened by R. F. Roedel, J. W. J. Carpender, and John R. Lindsay, Chicago.

Chairman's Address. ALDEN H. MILLER, Los Angeles.

Preventing Dissatisfaction Leading to Claims and Suits.
RICHARD BLUM, San Francisco.

Cancer and Reconstructive Surgery of the Head and Neck.
RICHARD T. FARRIOR, Tampa, Fla.

Vertigo: Its Differential Diagnosis.
MYRON M. HIPSKIND, Chicago.
Discussion to be opened by MALCOLM M. WILMES, Spokane, Wash., and LESTER A. BROWN, Atlanta, Ga.

An Evaluation of Nasopharyngeal Irradiation of Lymphoid Hyperplasia. DAVID A. DOLOWITZ, Salt Lake City.
Discussion to be opened by SHIRLEY H. BARON, San Francisco, and HERMAN Z. SEMENOV, Beverly Hills, Calif.

SECTION ON MILITARY MEDICINE

MEETS IN CIVIC AUDITORIUM, ROOMS 301-303

OFFICERS OF SECTION

Chairman—SILAS B. HAYS, Washington, D. C.
Vice-Chairman—ALPHONSE MCMAHON, St. Louis.
Secretary—CHARLES H. BRAMLITT, Washington, D. C.
Delegate—CHARLES L. LEEDHAM, Cleveland.
Representative to Scientific Exhibit—DOUGLAS B. KENDRICK, Washington, D. C.
Executive Committee—H. LAMONT PUGH, Arlington, Va.; RUSSEL V. LEE, Palo Alto, Calif.; SILAS B. HAYS; CHARLES H. BRAMLITT; and CHARLES L. LEEDHAM.

Wednesday, June 25—9 a. m.

Chairman's Address: Medical Preparedness.
SILAS B. HAYS, Washington, D. C.

Biomedical Test of Nuclear Weapons and Its Significance to Nuclear Medicine.
GERALD M. MCDONNEL, Washington, D. C.
Discussion to be opened by PAYNE S. HARRIS, Los Alamos, N. Mex., and ALBERT R. BEHNKE JR., San Francisco.

The Acute Radiation Syndrome in Man: Some Military and Civil Defense Aspects.
HERBERT B. GERSTNER, San Antonio, Texas.
Discussion to be opened by EUGENE P. CRONKITE, Upton, L. I., N. Y.

Late Effects of Radiation: Specifically Vascular and Neoplastic Changes. PETER C. NOWELL, Philadelphia.
Discussion to be opened by HENRY I. KOHN, San Francisco.

Current Status of Experimental Therapy of Acute Radiation Injury Utilizing Spleen and Bone Marrow Preparations.
LEONARD J. COLE, San Francisco.
Discussion to be opened by LEON O. JACOBSON, Chicago, or CHARLES B. CONGDON, Oak Ridge, Tenn.

Radiological Hazard Evaluation: A Critical Review of Present Concepts and a New Approach.
EDWARD L. ALPEN, San Francisco.
Discussion to be opened by ROBERT R. NEWELL, Palo Alto, Calif.

Thursday, June 26—8:45 a. m.

BUSINESS MEETING; ELECTION OF OFFICERS

Microwave Effects: A Report on the Progress of the Air Force Program Investigating the Biological Effects of Electromagnetic Radiation.
GEORGE M. KNAUF, Rome, N. Y.
Discussion to be opened by ROBERT T. P. DETREVILLE, Dayton, Ohio, and FREDERICK K. REID, Rome, N. Y.

Activities of the Office of the Assistant Secretary of Defe (Health and Medical) During the Past Year.
FRANK B. BERRY, Washington, D. C.

Lipid Studies in Health and Disease: A Preliminary Rep of the Results of Lipid Determinations in a Group Normal Male Officers and Patients with Vascular Diseases.
THOMAS W. MATTINGLY and LOREN F. PARMLEY JR., Washington, D. C.; EMMETT L. DURRUM, Palo Alto, Calif.; and MARION R. HYATT and ELIZABETH R. E. SMITH, formerly of Washington, D. C.
Discussion to be opened by JOHN J. SAMPSON, San Francisco.

Blood Pepsinogen and Peptic Ulcers in Inductees.
PAUL G. YESSLER, Washington, D. C.; I. ARTHUR MIRSKY, Pittsburgh; MORTON F. REISER, New York; and DAVID MCK. RIOCH, Washington, D. C.
Discussion to be opened by LESTER J. POPE, Washington, D. C., and J. ALFRED RIDER, San Francisco.

Renal Residuals of Acute Hemorrhagic Fever: Three-t Five-Year Follow-up.
MILTON E. RUBINI and SEYMOUR JABLON, Washington, D. C., and MARION E. MCDOWELL, Tokyo.
Discussion to be opened by CHARLES L. LEEDH Cleveland, and ROBERT L. HULLINGHORST, Washington, D. C.

Panel Discussion on Reserve Affairs:
Your Future in the Medical Reserve

Moderator: SILAS B. HAYS, Washington, D. C.

Participants: JAMES H. KIDDER, PAUL GOODWIN, and D. J. O'BRIEN, Washington, D. C.

Friday, June 27—9 a. m.

Research on Human Factors of Aerial Warfare.
JOHN P. STAPP, Holloman Air Force Base, N. Me
Discussion to be opened by JOHN R. POPPEN, Northridge, Calif., and WILLIAM R. LOVELACE II, Albuquerque, N. Mex.

Experience with "Medicare."
PAUL I. ROBINSON, Washington, D. C.
Discussion to be opened by DAN C. OGLE, Washington, D. C., and WILLIAM B. THOMPSON, Hollywood, Calif.

Influenza in the Armed Forces 1957-1958: A Recapitulation.
ARTHUR P. LONG, HERSCHEL E. GRIFFIN, and ARNOLD M. REEVE, Washington, D. C.
Discussion to be opened by GEORGE K. FAIR, Washington, D. C.

Efficacy of Immunization Against Asian Influenza.
JOHN R. SEAL, Washington, D. C., and BENJAMIN F. GUNDELFINGER, Great Lakes, Ill.
Discussion to be opened by EDWIN H. LENNETTE, Berkeley, Calif.

Reactions to Influenza Vaccine.
HERSCHEL E. GRIFFIN, Washington, D. C.
Discussion to be opened by BENJAMIN F. GUNDELFINGER, Great Lakes, Ill.

Clinical Aspects of Influenza.
CARROLL P. HUNGATE; T. WINSTON GOULDIN; GEORGE N. KERRIHARD; MILBURN W. HOBSON; and LEONARD E. WALLACE, Olathe, Kan.
Discussion to be opened by CHRISTIAN GRONBECK JR., Washington, D. C.

Studies in Human Isolation and Crew Confinement.
EDWIN Z. LEVY, G. E. RUFF, and V. H. THALER, Dayton, Ohio.
Discussion to be opened by ROBERT G. GIBBY, Richmond, Va.

SECTION ON MISCELLANEOUS TOPICS

Session on Medical Professional Liability

[illegible]

[illegible]

OFFICERS OF SESSION

Chairman—Joseph F. Sadusk Jr., Oakland, Calif.
Secretary—H. Close Hesseltine, Chicago

Tuesday, June [illegible]—2 p.m.

Standard Provisions of Professional Liability Insurance Policies. Howard Hassard, San Francisco.

General Malpractice Insurance Problems. [illegible], New York.

Expert Advisory and Witness Panels. Joseph F. Sadusk Jr., Oakland, Calif.

National Medical Professional Liability Trends. C. Joseph Stetler, Chicago.

Session on Traffic Accidents

[illegible]

[illegible]

OFFICERS OF SESSION

Chairman—Fletcher D. Woodward, Charlottesville, Va.
Secretary—Horace E. Campbell, Denver

Wednesday, June [illegible]—2 p.m.

Introduction. Fletcher D. Woodward, Charlottesville, Va.

The Role of the Physician in Motor Vehicle Accident Prevention. James Goddard, Washington, D.C.

Automobile Injuries and Deaths. [illegible] Jr., Holloman Air Force Base, N. Mex.

Psychological and Psychophysiological Factors in Motor Vehicle Accidents: A Follow-up Study. John J. Conger, Herbert S. Gaskill, Donald D. Glad, Robert V. Rainey, William L. Sawrey, and Edward S. Turrell, Denver.

Alcohol in the Single Car Fatal Accident: The Experience of Westchester County, New York. William Haddon Jr., [illegible], Albany, N.Y., and Victoria A. [illegible], Valhalla, N.Y.

A Guide for Physicians in Determining Fitness to Drive a Motor Vehicle. Seward E. Miller, Ann Arbor, Mich., and Harold Brandaleone, New York.

Symposium and Panel Discussion on Motor Vehicle Accidents and Their Prevention

Moderator: Fletcher D. Woodward, Charlottesville, Va.

The Role of State Medical Societies in Motor Vehicle Accident Prevention. John E. [illegible], Bellaire, Mich.

Motor Vehicle Design. John O. Moore, New York.

Cornell-Liberty Car and Automobile Crash Injuries. Edward Dye, Buffalo, N.Y.

Driver Education. Amos Neyhart, State College, Pa.

Law Enforcement. E. C. [illegible], Sacramento, Calif.

Discussion and question and answer period.

Session on Injury in Sports

[illegible]

OFFICERS OF SESSION

Chairman—Allan J. Ryan, Meriden, Conn.
Secretary—Harold F. [illegible], Berkeley, Calif.

Thursday, June [illegible]—9 a.m.

Symposium on Sports and Sport Injuries

The Clinical Physiology of Exercise. Ernst Jokl, Lexington, Ky.

Protecting the Brain. [illegible], New York.

The Diagnosis and Treatment of Ankle Injuries Sustained in Sports. Thomas B. Quigley, Cambridge, Mass.

The Prevention of Injuries in College Athletics. Augustus Thorndike, Cambridge, Mass.

The Prevention and Treatment of Ski Injuries. [illegible], New York.

Respiratory Physiology and Skin Diving. Robert W. [illegible], San Rafael, Calif.

Indications for Surgical Treatment of Ligament Injuries of the Knee. Don H. O'Donoghue, Oklahoma City.

Session on Allergy

[illegible]

OFFICERS OF SESSION

Co-Chairmen—Orval R. Withers, Kansas City, Mo., and William B. Sherman, New York.
Secretary—[illegible], Topeka, Kan.

Friday, June [illegible]—9 a.m.

The Allergic Index. [illegible], New York, and [illegible], L.I., N.Y.

Allergy and the Tonsil Problem in Children. [illegible], Seattle.

A Holistic Approach to Clinical Problems of Hypersensitivity. [illegible], Kent, Ohio.

Dermographism: Clinical Observations. [illegible] and [illegible], Little Rock, Ark.

Results of Desensitization with Stinging Insect Antigens. Robert A. [illegible] and Robert F. [illegible], Spokane, Wash.

Management of Chronic Urticaria. [illegible], Huntington Park, Calif.

Bronchial Asthma Due to Food Allergy: Its Typical History, Frequency, and Control. Albert H. Rowe, Albert H. Rowe Jr., and [illegible], Oakland, Calif.

Therapy of Acute Attacks of Asthma in Infants and Children. John P. McGovern, Houston, Tex.

Panel on Asthma

Moderator: Giles A. Koelsche, Rochester, Minn.

Participants: John P. McGovern, Houston, Tex.; Ralph Bookman, Los Angeles; M. Coleman Harris, San Francisco; and Paul Van Arsdel, Seattle.

SECTION ON NERVOUS AND MENTAL DISEASES

[illegible]

[illegible]

OFFICERS OF SECTION

Chairman—Harold C. Voris, Chicago
Vice-Chairman—[illegible], Albany, N.Y.
Secretary—Adolph L. Sahs, Iowa City
Delegate—Francis M. Forster, Washington, D.C.
Representative to Scientific Exhibit—Benjamin Boshes, Chicago.

Executive Committee—Lee M. Eaton, Rochester, Minn.; Karl O. von Hagen, Los Angeles; Harold C. Voris; Adolph L. Sahs; and Francis M. Forster.

Wednesday, June 25—9 a. m.

Sleep Deprivation. Louis Jolyon West, Oklahoma City.
Discussion to be opened by Eugene Ziskind, Los Angeles, and Robert B. Aird, San Francisco.

Psychoses: Intracranial Neoplasms and Genetics.
J. A. Buckwalter, R. T. Soper, and L. A. Knowler, Iowa City.
Discussion to be opened by William P. Creger, San Francisco, and Cecil L. Wittson, Omaha.

The Use of Lysergic Acid Diethylamide in a Psychotherapeutic Setting.
Sidney V. Cohen and Betty Eisner, Los Angeles.
Discussion to be opened by Meyer A. Zeligs, San Francisco, and George Saslow, Portland, Ore.

An Appraisal of Psychiatric Problems and Preferences for Instruction as Reported by 364 General Practitioners.
Cecil L. Wittson, LaVerne C. Strough, and Jackson A. Smith, Omaha.
Discussion to be opened by Louis Jolyon West, Oklahoma City, and Hale F. Shirley, San Francisco.

Isolation as a Psychopathological Factor in Medical Illness. Eugene Ziskind, Los Angeles.
Discussion to be opened by George S. Johnson, San Francisco, and Sidney V. Cohen, Los Angeles

Experimental Studies of the Psychiatric Interview.
George Saslow, J. D. Matarazzo, R. G. Matarazzo, and J. S. Phillips, Portland, Ore.
Discussion to be opened by Bernard I. Kahn and Thomas A. Gonda, San Francisco

Thursday, June 26—9 a. m.

ELECTION OF OFFICERS

Chairman's Address. Harold C. Voris, Chicago.

Spinal Cord Tumors in Children.
Robert W. Rand and Carl W. Rand, Los Angeles.
Discussion to be opened by John W. Hanbery, San Francisco, and W. Keasley Welch, Denver.

Nasal Encephaloceles.
Henry W. Dodge Jr., J. Grafton Love, and James W. Kernohan, Rochester, Minn.
Discussion to be opened by Howard A. Brown, San Francisco, and C. Hunter Shelden, Pasadena, Calif.

Two-Year Experience with Chemopallidectomy.
Harold D. Paxton and Robert S. Dow, Portland, Ore.
Discussion to be opened by Robert W. Rand, Los Angeles.

Subdural Hematoma in Elderly Persons.
W. Keasley Welch and Peter Stuteville, Denver.
Discussion to be opened by Harold C. Voris, Chicago, and O. W. Jones Jr., San Francisco.

Compression of the Posterior Root Fibers in the Treatment of Trigeminal Neuralgia.
C. Hunter Shelden and Robert H. Pudenz, Pasadena, Calif., and Manuel Barba, San Diego, Calif.
Discussion to be opened by Edwin B. Boldrey, San Francisco, and Henry W. Dodge Jr., Rochester, Minn.

Friday, June 27—9 a. m.

The Single Seizure: Its Study and Management.
Madison H. Thomas, Salt Lake City.
Discussion to be opened by Knox H. Finley, San Francisco, and Fred Plum, Seattle.

Intrinsic Cerebral Cortical Circulation and Focal Vascular Lesions. Cyril B. Courville, Los Angeles
Discussion to be opened by Walter F. Schaller, San Francisco.

The Clinical Effects of Occlusion of the Anterior Cerebral Artery. J. E. Webster and E. S. Gurdjian, Detroit
Discussion to be opened by Donald Macrae, San Francisco, and Cyril B. Courville, Los Angeles

Calcium Metabolism in Poliomyelitis. Fred Plum, Seattle
Discussion to be opened by R. H. Flocks, Iowa City, and Henry W. Newman, San Francisco.

Pituitary Failure as a Clue to the Diagnosis of Tumors of the *Sellar Region.*
Edward C. Clark, Raymond V. Randall, and Henry W. Dodge Jr., Rochester, Minn.
Discussion to be opened by Gilbert S. Gordan Jr., San Francisco, and J. E. Webster, Detroit

Electromyographic Studies on Patients with Chronic Headaches.
Herman A. Dickel and Henry H. Dixon, Portland Ore.
Discussion to be opened by Edward C. Clark, Rochester, Minn., and A. A. Marinacci, Los Angeles

SECTION ON OBSTETRICS AND GYNECOLOGY

MEETS IN CIVIC AUDITORIUM, POLK HALL

OFFICERS OF SECTION

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Executive Committee—Frank R. Lock, Winston-Salem, N. C.; D. Frank Kaltreider, Baltimore, Woodard D Beacham; Keith P. Russell, and Ralph E. Campbell

Tuesday, June 24—2 p. m.

JOINT MEETING WITH THE SECTION ON RADIOLOGY
IN CIVIC AUDITORIUM, POLK HALL

Problems in Hysterosalpingography.
Maurice Dufresne, Léon Gérin-Lajoie, and Roger Maltais, Montreal.

Hysterosalpingography: A Diagnostic Aid in Gynecology.
William W. Bryan and A. C. Richardson, Atlanta, Ga

Discussion of papers by Drs. Dufresne, Gérin-Lajoie and Maltais and Drs. Bryan and Richardson to be opened by C. Frederick Fluhmann, San Francisco

A Clinical Evaluation of the Pelvoencephalogram.
E. L. King, Isadore Dyer, John A. King, and Milton J. Hoffman, New Orleans.
Discussion to be opened by D. Frank Kaltreider Baltimore.

Symposium on Radiation Hazards

Common Sense in the Diagnostic Use of X-ray.
J. E. Miller and Gerald Swindell, Dallas, Texas

Radiation Dosage to the Female Gonads During Diagnostic Roentgen Procedures.
George Cooper, W. Norman Thornton, and Kenneth Williams, Charlottesville, Va.

Radiation Hazards in the Practice of Obstetrics and Gynecology. Bernard Roswit, Bronx, N. Y.

Reduction of Radiation Exposure in Obstetric Radiography.
John A. Campbell and John W. Beeler, Indianapolis.

Discussion of papers by Drs. Miller and Swindell; Drs. Cooper, Thornton, and Williams; Dr. Roswit; and Drs. Campbell and Beeler to be opened by Curt Stern, Berkeley, Calif.; George D. Davis, Rochester, Minn.; and James F. Nolan, Los Angeles.

Wednesday, June 25—2 p. m.

Chairman's Address: The History of the Section on Obstetrics and Gynecology of the American Medical Association. Woodard D. Beacham, New Orleans.

The Individualization of the Therapy of Carcinoma In Situ of the Cervix—A Program.
James S. Krieger and Lawrence J. McCormack, Cleveland.
Discussion to be opened by Daniel G. Morton, Los Angeles, and Karl H. Martzloff, Portland, Ore.

Ectopic Pregnancy.
George D. Malkasian Jr., James S. Hunter Jr., and William H. ReMine, Rochester, Minn.
Discussion to be opened by Donald W. deCarle, San Francisco.

The Use of Posterior and Anterior Colpotomy in Gynecology. Raphael B. Durfee, Portland, Ore.
Discussion to be opened by Curtis J. Lund, Rochester, N. Y.

The Physiologic Basis for Hormone Therapy in the Female.
Russell R. de Alvarez and Elizabeth K. Smith, Seattle.

The Fertility-Promoting and Anti-Fertility Effects of New Steroid Hormonal Substances.
Edward T. Tyler and Henry J. Olson, Los Angeles.

Discussion of papers of Drs. de Alvarez and Smith, and Drs. Tyler and Olson to be opened by Roberto F. Escamilla and Charles E. McLennan, San Francisco.

Thursday, June 26—2 p. m.

Evaluation of the Newborn Infant: Second Report.
Virginia Apgar, New York
Discussion to be opened by L. Stanley James, New York, and Donald A. Dallas, San Francisco.

Metabolic Effects and Clinical Use of Chlorothiazide (Diuril) in Edema of Normal and Toxemic Pregnancy.
N. S. Assali, Lewis Judd, and Norman Mondz, Los Angeles.
Discussion to be opened by Howard A. Harper, San Francisco, and Eugene J. Ellis, Los Angeles.

Late Sequela of Saddle Block Anesthesia in Obstetrics.
Eva F. Dodge and Willis Brown, Little Rock, Ark.
Discussion to be opened by Bernard J. Hanley, Los Angeles.

The Surgical Management of the Tubal Factor in Infertility.
Roy W. Cauwet, San Francisco.
Discussion to be opened by Purvis L. Martin, San Diego, Calif.

To Do, Or Not To Do, Cesarean Section.
Joseph M. Harris, Beverly Hills, Calif., and J. A. Nessim, Los Angeles.
Discussion to be opened by Frederick H. Falls, River Forest, Ill.

The Premarital Examination.
Paul Scholten, San Francisco.
Discussion to be opened by Ronald P. Nielson, Portland, Ore.

BUSINESS MEETING; ELECTION OF OFFICERS

SECTION ON OPHTHALMOLOGY

MEETS IN THE FAIRMONT HOTEL, TERRACE ROOM

OFFICERS OF SECTION

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Program of Section on Ophthalmology

Tuesday, June 24—2 p. m.

Chairman's Address. Dohrmann K. Pischel, San Francisco.

Address of Invited Foreign Guest: Indications for Clinical Electroretinography. Prof. Gosta Karpe, Stockholm.

Conjunctival Flaps in the Treatment of Corneal Disease with Special Reference to New Techniques of Application.
Trygve Gundersen, Boston.
Discussion to be opened by Phillips Thygeson, San Jose, Calif.

The Treatment of Retinoblastoma by X-ray and Triethylene Melamine.
Algernon B. Reese, George A. Hyman, Norah duV. Tapley, and Arnold W. Forrest, New York.
Discussion to be opened by Michael J. Hogan, San Francisco.

Galactosemia with Associated Cataracts in Children.
Warren A. Wilson, Los Angeles.
Discussion to be opened by Harold F. Falls, Ann Arbor, Mich.

The Neurosurgeon's Role in Acute Visual Failure.
Alfred Uihlein and C. Wilbur Rucker, Rochester, Minn.
Discussion to be opened by William E. Krewson III, Philadelphia.

Ocular Signs and Prognosis in Subdural and Subarachnoid Bleeding in Young Children.
Robert W. Hollenhorst and Harold A. Stein, Rochester, Minn.
Discussion to be opened by Donald J. Lyle, Cincinatti.

Wednesday, June 25—2 p. m.

EXECUTIVE SESSION

The Prognosis of Melanomas of the Iris Following Excision by Iridectomy: A Study of 108 Cases in the Registry of Ophthalmic Pathology.
Benjamin Rones and Lorenz Zimmerman, Washington, D. C.
Discussion to be opened by Georgiana Dvorak-Theobold, Oak Park, Ill.

Diseases of the Macula: Basic Histopathologic Processes in Retina, Pigment Epithelium, and Choroid Which Modify Their Clinical Appearance.
Bertha A. Klien, Chicago.
Discussion to be opened by William C. Frayer, Philadelphia.

Clinical and Laboratory Experiences with Virac, a Bactericidal, Fungicidal, and Viricidal Agent.
John E. Harris, Peter P. Rowell, and Olive Beaudreau, Portland, Ore.
Discussion to be opened by Henry F. Allen, Boston.

The Effect of Tonography and Other Pressures on the Intraocular Blood Volume.
Jerome W. Bettman, Victor Fellows, and Peter Chao, San Francisco.
Discussion to be opened by Bernard Becker, St. Louis.

Thursday, June 26—2 p. m.

Panel Discussion on Retinal Detachment

A Scleral Imbrication Technique.
Albert N. Lemoine Jr., James T. Robison Jr., and Larry L. Calkins, Kansas City, Kan.

An Evaluation of Ophthalmoscopy After Retinal Detachment Surgery. Abiah Schwartz, San Mateo, Calif.

Retinal Detachment Surgery.
James S. Shipman, Camden, N. J.

The Old Versus the New.
John W. Henderson, Rochester, Minn.

The Importance and Employment of Diathermy in Today's Retinal Detachment Surgery.
Graham Clark, New York.

Further Experience with Vitreous Implants in Old Retinal Detachments. Donald M. Shafer, New York.

Diathermy or Scleral Resection.
Joseph A. C. Wadsworth, New York

The Application of Ultrasonic Locating Techniques to Ophthalmology: Part II. The Ultrasonic Slit Lamp.
Gilbert Baum, Port Chester, N. Y.
Discussion to be opened by S. Rodman Irvine, Beverly *Hills, Calif.;* Peter C. Kronfeld, *Chicago;* P. Robb McDonald, Philadelphia; and A. D. Ruedemann Sr., Detroit.

Association for Research in Ophthalmology, Inc.

OFFICERS

Chairman—Michael J. Hogan, San Francisco.
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Program of Association for Research in Ophthalmology, Inc.

Monday, June 23—8:30 a. m.

MEETS IN THE FAIRMONT HOTEL, TERRACE ROOM

An Electromyographic Study of Asymmetric Convergence.
Edward Tamler, Arthur Jampolsky, and Elwyn Marg, San Francisco.
Discussion to be opened by Fred Blodi.

The *Electromyographic Pattern of Saccadic* Eye Movements.
James E. Miller, St. Louis.
Discussion to be opened by Fred Blodi.

Heterologous Immunological Studies with Lens.
Patricia L. Fitzgerald and Seymour P. Halbert, New York.
Discussion to be opened by Phillips Thygeson.

Radioelectrophoretic Patterns of Aqueous and Plasma After Intravenous Injection of I^{131} Labeled Insulin into Normal and Diabetic Rabbits.
Kenneth M. Giles and John E. Harris, Portland, Ore.
Discussion to be opened by John W. Patterson.

11-CIS Vitamin A in the Prevention of Retinal Rod Degeneration: An Animal Study.
Albert Chatzinoff, New Hyde Park, N. Y.; William Oroshnik, and Nathan Millman, Raritan, N. J., and Fred Rosen, Buffalo.
Discussion to be opened by Albert M. Potts.

INTERMISSION

Electrical Activity of Cells in the Eye of Limulus.
M. G. G. Fuortes, Bethesda, Md.

Conduction Velocities in Rabbit's Optic Nerve and Their Relationship to Retinal Spikes.
Ragner Granit, Stockholm, Sweden, and Elwyn Marg, San Francisco.

The Electrical Activity of the Eye During Accommodation
Jerry H. Jacobson, Hunter H. Romaine, G Peter Halberg, and George Stephens, New York.

Changes in Spontaneous and Evoked Potentials on the Electroretinogram Induced by Drugs: Strychnine, Atropine, LSD-25, Mescaline. Julia T. Apter, Chicago

Monday, June 23—2 p. m.

Mechanism of Corneal Destruction by Pseudomonas Proteases.
Earl Fisher Jr., and James H. Allen, New Orleans
Discussion to be opened by Daniel Vaughn.

Toxoplasmosis: The Nature of Virulence.
Herbert E. Kaufman, Jack S. Remington, and Leon Jacobs, Bethesda, Md.
Discussion to be opened by Michael J. Hogan

Studies on Chronic Toxoplasmosis: The Relation of Infective Dose to Residual Infection and to the Possibility o Congenital Transmission.
Jack S. Remington, Leon Jacobs, and Herbert E Kaufman, Bethesda, Md.
Discussion to be opened by Michael J. Hogan.

In Vitro Observations on the Behavior of Conjunctival and Corneal Cells in Relation to Electrolytes.
John Y. Harper Jr., Galveston, Texas
Discussion to be opened by Marguerite A. Constant

Physiological Studies of the Developing Chick Cornea.
Alfred H. Coulombre and Jane L. Coulombre, New Haven, Conn.
Discussion to be opened by George K. Smelser

INTERMISSION

Antigen-Antibody Reaction in the Rabbit Cornea.
C. E. Van Arnam, John Pratt-Johnson, Alfred E Maumenee, and Frederick G. Germuth, Jr, Baltimore.
Discussion to be opened by Phillips H. Thygeson.

The Effects of Various Constituents of a Synthetic Medium *on Cell Division* in the Epithelium of Cultured Lenses
Carl Wachtl and V. Everett Kinsey, Detroit.
Discussion to be opened by Marguerite Constant.

A Tissue Culture Technique for Growing Corneal Epithelium Stroma and Endothelium Separately.
Frederick W. Stocker, A. Ewing, R. Georgiade, and N. Georgiade, Durham, N. C.
Discussion to be opened by Carl Wachtl

Tuesday, June 24—8:30 a. m.

Electron Microscopy of the Ciliary Epithelium and Zonula of the Rabbit.
George D. Pappas and George K. Smelser, New York
Discussion to be opened by Parker Heath.

The Application of Ultrasonic Locating Techniques to Ophthalmology.
Gilbert Baum, Port Chester, N. Y.
Discussion to be opened by Howard M. Yanof.

Protein Dynamics in the Eye Studied with Labeled Proteins
David M. Maurice, San Francisco
Discussion to be opened by Harry Green.

Changes in Proteins and Protein Synthesis *in* Lenses of Rats During the Development of Tryptophan and Radiation Cataract.
Zacharias Dische, Joy F. Elliott, and George R Merriam, New York.
Discussion to be opened by Jim Kinoshito.

INTERMISSION

he Influence of Methylene Blue and Other Dyes on the Cation and Water Balance of the Lens.
John E. Harris, Louise Gruber, and Gertrude Hoskinson, Portland, Ore.
Discussion to be opened by Bernard Becker.

dditional Observations on Lenticular Potentials.
Nick Spirelakis, and Albert M. Potts, Cleveland.
Discussion to be opened by D. Venkat Reddy.

In Vitro Lens Studies: III. Lens Potential.
Marguerite A. Constant, St. Louis.
Discussion to be opened by Jim Kinoshita.

The Transfer of Corneal Water as Measured with the Aid of Tritium Oxide.
Albert M. Potts and Beatrice Cohen, Cleveland.
Discussion to be opened by Frank Newell.

Ocular Changes Induced by Polysaccharides: II. Detection of Hyaluronic Acid Sulfate After Injection into Ocular Tissues.
Ellen Talman, John E. Harris, and Louise Gruber, Portland, Ore.
Discussion to be opened by Zacharias Dische.

Wednesday, June 25—8:30 a. m.

Elevation of Choroid by Insertion of Polyvinyl Sponge: An *Experimental Study.*
Martin S. Kazdan and John W. Henderson, Rochester, Minn.
Discussion to be opened by William G. Everett.

Observations on *Accommodative Convergence Especially* with Regard to Non-linear Relationships.
T. G. Martens and Kenneth N. Ogle, Rochester, Minn.
Discussion to be opened by Gerhard A. Brecher.

The Effect of Topical Application of Certain So-called Autonomic Drugs on Human Visual Flicker Discrimination.
Mathew Alpern and Robert S. Jampel, Ann Arbor, Mich.
Discussion to be opened by Paul W. Miles.

Studies on the Anatomy and Pathology of the Peripheral Cornea. John A. Pratt-Johnson, San Francisco.
Discussion to be opened by A. Ray Irvine Jr.

INTERMISSION

BUSINESS MEETING

Distribution of Acid Mucopolysaccharides in the Developing Mouse Eye: A Study of Pigmented and Albino Strains Including the Rodless C3H Mouse.
Lorenz E. Zimmerman and Ann B. Eastham, Washington, D. C.
Discussion to be opened by George K. Smelser.

The Friedenwald Memorial Lecture.
Bernard Becker, St. Louis.

Thursday, June 26—8:30 a. m.

Lacrimal Protein Patterns of Industrial Workers.
Olive Fedde Erickson, San Francisco.
Discussion to be opened by Peter C. Kronfeld.

Incorporation of Radioactive Sulfate in the Guinea Pig Eye: Influence of Hormones and Avitaminosis: An Autoradiographic Investigation. Godfred Larsen, New York.
Discussion to be opened by Frank Newell.

Elaboration of the Bicarbonate Ion in Intraocular Fluids: VI. Kinetic Studies with C-14 Labeled $NaHCO_3$.
Harry Green, John L. Sawyer, and Samuel I. Askovitz, Philadelphia.
Discussion to be opened by V. Everett Kinsey.

Outflow Patterns of the Cat Eye.
Frank J. Macri, Bethesda, Md.
Discussion to be opened by Robert Moses.

INTERMISSION

The Effects of Beta Radiation on the Aqueous Secretions in Rabbits. Frank S. Schutt, Alhambra, Calif.
Discussion to be opened by Peter C. Kronfeld.

Pressure-Volume Relationship in the Intact Human Eye.
Robert A. Moses and Ahti Tarkkanen, St. Louis.
Discussion to be opened by Earle H. McBain.

Proctor Medal Recipient.

Alternate Paper: The Hydrophilic Property of the Orbital Connective Tissue of Normal and Exophthalmic Animals.
George K. Smelser and Victoria Ozanics, New York.

SECTION ON ORTHOPEDIC SURGERY

MEETS IN MARK HOPKINS HOTEL, PEACOCK ROOM

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Tuesday, June 24—2 p. m.

Postoperative Osteomyelitis of the Hip Joint.
Lewis Cozen, J. Kelly, and J. Michaels, Los Angeles.
Discussion to be opened by Otto E. Aufranc, Boston.

Degenerative Arthritis of the Lumbosacral Joint: The End Space Lesion. John C. Wilson Jr., Los Angeles.
Discussion to be opened by Frederick L. Liebolt, New York.

Hanging Cast Treatment of Acromioclavicular Separations and Selected Clavicular Fractures.
Sam G. Stubbins and W. H. McGaw, Cleveland.
Discussion to be opened by Harry B. Hall, Minneapolis.

Late Results of the Treatment of Legge-Perthes' Disease.
Warren G. Stamp, G. M. Canales, and R. T. Odell, St. Louis.
Discussion to be opened by R. K. Ghormley, Carmel, Calif.

The Use of Sympathetic Blocks in Orthopedic Surgery.
John J. Brennan, El Paso, Texas.
Discussion to be opened by Marshall R. Urist, Los Angeles.

BUSINESS MEETING

Wednesday, June 25—2 p. m.

The Grice Extra-articular Subastragular Fusion in the Cerebral Palsy Patient.
Lenox D. Baker and Richard Dodelin, Durham, N. C.
Discussion to be opened by Frederic C. Bost, San Francisco.

The Orthopedic Management of Neuropathic Joints.
ALAN DEF. SMITH, New York; BALU SANKARAN, Madras, South India; ROBERT L. SAMILSON, San Francisco; and FRANK A. BERSANI, Syracuse, N. Y.
Discussion to be opened by JOSEPH E. BROWN, Cleveland.

Neurotrophic Ulcers of the Foot: A Review of Forty-Seven Cases.
P. J. KELLY and M. B. COVENTRY, Rochester, Minn.
Discussion to be opened by ROBERT A. MURRAY, Temple, Texas.

Chairman's Address. FREDERICK R. THOMPSON, New York.

Congenital Spinal Curvature Treated by Fusion.
CHARLES A. PORRETTA and WILLIAM H. BICKEL, Rochester, Minn., and JOHN H. MOE, Minneapolis.
Discussion to be opened by JOSEPH C. RISSER, Pasadena, Calif.

The Medical Legal Aspects of Whiplash Injury.
CHARLES J. FRANKEL, Charlottesville, Va.
Discussion to be opened by M. RUTH JACKSON, Dallas, Texas.

Thursday, June 26—2 p. m.

BUSINESS MEETING; ELECTION OF OFFICERS

Upper Arm Block Anesthesia in Children, with Special Reference to Its Use in Fractures.
MACK L. CLAYTON and DONALD A. TURNER, Denver.
Discussion to be opened by PRESTON J. BURNHAM, Salt Lake City.

A Physiologic Treatment for Fractures of the Metacarpals and Phalanges. PRESTON J. BURNHAM, Salt Lake City.
Discussion to be opened by LOT D. HOWARD JR., San Francisco.

Fractures of the Tibial Plateaus.
VERNON C. TURNER, Evanston, Ill.
Discussion to be opened by J. VERNON LUCK, Los Angeles.

A Treatment for Comminuted Fractures of the Os Calcis.
CHESTER R. ZEISS, Chicago.
Discussion to be opened by ROBERT J. JOPLIN, Brookline, Mass.

Internal Fixation of the Fibula in Fractures of Both Bones of the Leg. E. BURKE EVANS, Galveston, Texas.
Discussion to be opened by JAMES I. KENDRICK, Cleveland.

Complications of Traction Treatment of Supracondylar Fractures of the Humerus in Children.
O. SHERWIN STAPLES, Hanover, N. H.
Discussion to be opened by JOHN J. FAHEY, Chicago.

Friday, June 27—9 a. m.

JOINT MEETING WITH THE SECTION ON PHYSICAL MEDICINE IN MARK HOPKINS HOTEL, PEACOCK ROOM

Symposium on the Diagnosis and Treatment of Pain in the Shoulder and Arm

Pain in the Shoulder from the Standpoint of the Internist.
EDWARD H. MORGAN, Seattle.

Pain in the Arm and Shoulder from the Neurosurgical Viewpoint. PAUL C. BUCY, Chicago.

Orthopedic Management of the Painful Shoulder.
JESSE T. NICHOLSON and HENRY S. WIEDER JR., Philadelphia.

Shoulder-Arm Syndrome. JOHN W. PENDER, Palo Alto, Calif.

Physical Treatment of the Painful Arm and Shoulder.
PAUL A. NELSON, Cleveland.

SECTION ON PATHOLOGY AND PHYSIOLOGY

MEETS IN CIVIC AUDITORIUM, ROOMS 301-303

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Executive Committee—ROGER D. BAKER, Durham, N. C.; H. RUSSELL FISHER, Los Angeles; EDWIN F. HIRSCH; HUGH A. EDMONDSON; and LALL G. MONTGOMERY.

Tuesday, June 24—2 p. m.

Neoplasms and Other Diseases in Aging Rats Following Partial and Total Body X-irradiation.
BALDWIN G. LAMSON, MARTA S. BILLINGS, and LESLIE R. BENNETT, Los Angeles.
Discussion to be opened by HENRY I. KOHN, San Francisco.

Hormonal Factors in the Experimental Pathogenesis of Liver Cancer.
PAUL KOTIN and CHARLES J. MCCAMMON, Los Angeles.

A Physiological Approach to the Successful Treatment of Endotoxin Shock in the Experimental Animal.
RICHARD C. LILLEHEI and LLOYD D. MACLEAN, Minneapolis.
Discussion to be opened by MAX HARRY WEIL, Duarte, Calif.

The Effect of Massive Transfusion on the Coagulation Mechanism of the Blood.
A. W. ULIN, S. GOLLUB, E. W. EHRLICH, and H. S. WINCHELL, Philadelphia.
Discussion to be opened by HERBERT A. PERKINS, San Francisco.

The Pathologic Manifestations of Stromal Endometriosis of the Uterus. WARREN C. HUNTER, Portland, Ore.
Discussion to be opened by RAPHAEL B. DURFEE and VINDON D. SNEEDEN, Portland, Ore.

Review of Surgically Removed Ovarian Tumors Over a Twelve-Year Period in a Large General and a Private Hospital.
WELDON K. BULLOCK, Los Angeles, and DOMINIC A. DESANTO, San Diego, Calif.
Discussion to be opened by GEORGE J. HUMMER, Santa Monica, Calif.

Virilizing and Feminizing Tumors: Hormonal Concentration in the Urine and Blood and Its Interpretation.
GERSON R. BISKIND, San Francisco.
Discussion to be opened by HENRY D. MOON, San Francisco.

Wednesday, June 25—2 p. m.

BUSINESS MEETING

Primary Dissecting Aneurysms (Dissecting Hemorrhage in Media) of Peripheral Arteries.
ALVIN G. FOORD and RICHARD D. LEWIS, Pasadena, Calif.
Discussion to be opened by WARREN BOSTICK, San Francisco.

An Analysis of the Causal Factors of Atherosclerosis.
EDWIN F. HIRSCH, Chicago.

Filtration Versus Local Formation of Lipids in the Pathogenesis of Atherosclerosis.
RUSSELL L. HOLMAN, HENRY C. MCGILL JR., JACK P. STRONG, and JACK C. GEER, New Orleans.

Blood Lipids and the Diet of Man.
Ancel Keys, Minneapolis.

Myocardial Infarction in Man and Experimental Animals.
Wilbur A. Thomas, W. S. Hartroft, and Robert M. O'Neal, St. Louis.

Why Are Men's Coronaries So Sclerotic?
William Dock, Brooklyn, N. Y.

The Gross Estimation and Significance of Atherosclerosis in the Aorta, Coronary, and Cerebral Arteries.
Albert E. Hirst Jr., Los Angeles; Ira Gore, West Roxbury, Mass.; G. Gordon Hadley and E. W. Gault, Vellore, South India.

Recent Researches in the Function and Metabolism of Essential Fatty Acids. Ralph T. Holman, Austin, Minn.

Discussion of papers on atherosclerosis to be opened by Laurance W. Kinsell, Oakland, Calif.

Thursday, June 26—2 p. m.

JOINT MEETING WITH THE SECTION ON UROLOGY
IN CIVIC AUDITORIUM, ROOMS 301-303

Pyuria: Aid or Deterrence in the Diagnosis of Urinary Tract Infections. Jay P. Sanford, Dallas, Texas.
Discussion to be opened by Donald Charnock, Los Angeles, and Lowell A. Rantz, San Francisco.

Analysis of Six Hundred Renal Biopsies.
Robert M. Kark, Oak Park, Ill.; Conrad L. Pirani, Chicago; Victor E. Pollak and Robert C. Muehrcke, Oak Park, Ill.
Discussion to be opened by Robert Lich Jr., Louisville, Ky.

The Practical Value of Urinary Stone Analysis.
Julius H. Winer, Santa Monica, Calif.
Discussion to be opened by Donald F. McDonald, Seattle.

Fibrinolysis in Urological Patients.
Louis J. Lombardo Jr., Los Angeles.
Discussion to be opened by William Baurys, Sayre, Pa.

Panel Discussion on Carcinoma of the Lower Urinary Tract

Moderator: Elmer Hess, Erie, Pa.

Pathologists.
F. K. Mostofi, Washington, D. C.; Albert F. Brown, Glendale, Calif.; and Nathan B. Friedman, Los Angeles.

Urologists.
Rubin Flocks, Iowa City; Perry B. Hudson, New York; and Earl E. Ewert, Boston.

Radiologist. Franz Buschke, Seattle.

SECTION ON PEDIATRICS

MEETS IN MASONIC TEMPLE, AUDITORIUM

Van Ness Avenue and Market Street

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Delegate—Woodruff L. Crawford, Rockford, Ill.
Representative to Scientific Exhibit—F. Thomas Mitchell, Memphis, Tenn.
Executive Committee—F. Thomas Mitchell, Memphis, Tenn.; M. G. Peterman, Milwaukee; George M. Wheatley; Wyman C. C. Cole Sr., Detroit; and Woodruff L. Crawford.

Wednesday, June 24—9 a. m.

The Management of Hypertrophic Pyloric Stenosis.
William F. Pollock and David H. Sprong Jr., Santa Monica, Calif.

Indications and Results in the Surgical Treatment of Pectus Excavatum (Funnel Chest).
Conrad R. Lam and Geoffrey Brinkman, Detroit.

Hypnosis as an Adjunct to Anesthesia in Children.
Milton J. Marmer, Beverly Hills, Calif.

The Treatment of Tetanus with Intermuscular Meprobamate.
M. A. Perlstein, Chicago.

Study of Deaths Attributed to Congenital Malformations.
Helen M. Wallace, Minneapolis; David Sanders, Margaret A. Losty, and Herbert Rich, New York.

Epilepsy in Childhood.
M. G. Peterman and E. M. Thomas, Milwaukee.
Discussion to be opened by Irvine McQuarrie, Oakland, Calif.

The Control of Accidental Poisoning—A Progress Report.
Howard M. Cann, Dorothy S. Neyman, and Henry L. Verhulst, Washington, D. C.

Treatment of Chronic and Recurrent Urinary Tract Infection with Nitrofurantoin.
Matthew Marshall Jr., and S. Harris Johnson III, Pittsburgh.

Breast Feeding in the United States: Extent and Possible Trend. Herman F. Meyer, Chicago.

The Public Health Aspects of Breast Feeding.
Herbert Ratner, Oak Park, Ill.

Thursday, June 25—9 a. m.

BUSINESS MEETING; ELECTION OF OFFICERS

Chairman's Address: Pediatrics in Transition.
George M. Wheatley, New York.

Antibiotic Prophylaxis in Pediatrics.
Robert A. Tidwell, Seattle.

Long-Term Use of Prednisone and Prednisolone in Juvenile Rheumatoid Arthritis.
Edward E. Harnagel, Los Angeles,

Treatment of the Acute Attack of Asthma in Childhood, with Special Reference to Short-Term Steriod Therapy.
Samuel J. Levin, Detroit.

The Practical Management of Erythroblastosis in a Community Hospital.
Maurice Adelman, D. William J. Bell, Frank Giunta, John T. Barrett, Leonard B. Bellin, and Ruth Appleton, Providence, R. I.

Serum Transaminase Activity in the Neonatal Period: A Valuable Aid in Differential Diagnosis of Jaundice in the Newborn Infant.
Simon Kove, Stanley Goldstein, and Felix Wroblewski, New York.

Thursday, June 26—2 p. m.

JOINT MEETING WITH THE SECTION ON PREVENTIVE MEDICINE
IN MASONIC TEMPLE, AUDITORIUM

Symposium on Competitive Athletics in Children

The Educational Aspects of Athletics for Children.
Fred V. Hein, Chicago.

Competitive Athletics from the Viewpoint of the Parent.
("Mystery speaker"—a celebrated Hollywood father.)

Competitive Athletics for Children.
Jean Hoxie, Hamtramck, Mich.

Desirable Athletics for Children.
George Maksim, Washington, D. C.

Essential Medical Supervision in Athletics for Children.
George B. Logan, Rochester, Minn.

The Role of Athletics in Physical Fitness Programs for Children. T. Campbell Goodwin, Cooperstown, N. Y.

The Implications of Longitudinal Study in Fitness Programs. Robert W. McCammon and Alan W. Sexton, Denver.

SECTION ON PHYSICAL MEDICINE

MEETS IN MASONIC TEMPLE, ROOM 1

Van Ness Avenue and Market Street

OFFICERS OF SECTION

Chairman—Miland E. Knapp, Minneapolis.
Vice-Chairman—Arthur L. Watkins, Boston.
Secretary—Earl C. Elkins, Rochester, Minn.
Delegate—Walter J. Zeiter, Cleveland.
Representative to Scientific Exhibit—Harold Dinken, Denver.
Executive Committee—Frances Baker, San Mateo, Calif.; Louis B. Newman, *Chicago;* Miland E. Knapp; Earl C. Elkins; and Walter J. Zeiter.

Wednesday, June 25—9 a. m.

BUSINESS MEETING

Chairman's Address: Problems in the Rehabilitation of the Hemiplegic Patient. Miland E. Knapp, Minneapolis.

Urologic Problems in Hemiplegic Rehabilitation.
Edward J. Lorenze, Howard B. Simon, and Jack L. Linden, New York.

Rehabilitation Potential in *Quadriplegic* Teenagers.
Herbert Kent, Oklahoma City.

Whiplash *Injuries:* Neurophysiologic Basis for Pain and *Methods Used* for Rehabilitation.
Emil Seletz, Los Angeles.

Rehabilitation of the Long-term Respirator Patient.
Harold N. Neu, Omaha.

Thursday, June 26—9 a. m.

The Use of Ultrasonic Diathermy in the Presence of Surgical Metallic Implants.
Justus F. Lehmann, Katherine E. Lane, Jack W. Bell, and George D. Brunner, Seattle.

Evaluation of Several *Commonly Used Physical Therapy* Modalities by Physiologic Means.
David I. Abramson, G. A. Tuhman, C. J. Fleisher, S. Tuck Jr., H. Rejal, and Y. Bell, Chicago.

The Hands in Arthritis and Related Rheumatic Conditions.
Darrell C. Crain, Washington, D. C.

Brine Bath Treatments for Decubitus Ulcers.
Roy H. Nyquist, Long Beach, Calif.

Examination for Muscle Weakness in Infants and Small Children.
Ernest W. Johnson and Karl J. Olsen, *Columbus,* Ohio.

The Role of the *Pediatrician* in the Physical Fitness of Youth. W. Kenneth Lane, New York.

Friday, June 27—9 a. m.

JOINT MEETING WITH THE SECTION ON ORTHOPEDIC SURGERY IN MARK HOPKINS HOTEL, PEACOCK ROOM

Symposium on the Diagnosis and Treatment of Pain in the Shoulder and Arm

Pain in the Shoulder from the Standpoint of the Internist.
Edward H. Morgan, Seattle.

Pain in the Arm and Shoulder from the Neurosurgical Viewpoint. Paul C. *Bucy, Chicago.*

Orthopedic Management of the Painful Shoulder.
Jesse T. Nicholson and Henry S. Wieder Jr., Philadelphia.

Shoulder-Arm Syndrome. John W. Pender, Palo Alto, Cal

Physical Treatment of the Painful Arm and Shoulder.
Paul A. Nelson, Cleveland

SECTION ON PREVENTIVE MEDICINE

MEETS IN MASONIC TEMPLE, AUDITORIUM

Van Ness Avenue and Market Street

OFFICERS OF SECTION

Chairman—Bruce Underwood, Washington, D. C.
Vice-Chairman—Robert A. Kehoe, Cincinnati.
Secretary—Frank Princi, Cincinnati.
Delegate—Rutherford T. Johnstone, Los Angeles.
Representative to Scientific Exhibit—Paul A. Davis, Akro Ohio.
Executive Committee—Edward P. Luongo, Los Angele Edward J. Tracy, Dayton, Ohio; Bruce Underwoo *Frank Princi;* and *Rutherford T. Johnstone.*

Tuesday, June 24—2 p. m.

BUSINESS MEETING

Chairman's Address. Bruce Underwood, Washington, D.

JOINT MEETING WITH AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE

Symposium on Occupational Medicine for the Private Practitioner

Moderator: Charles H. Hine, San Francisco.

The Actual or *Alleged Occupational* Disease: Prop *Preparation of the Case and Method of* Reporting.
Rutherford T. Johnstone, Los Angele

The Physician as Advisor to Industrial Management.
Clifford H. Keené, Oakland, Cal

How Industry Compensates the Physician.
Elston L. Belknap, Milwauke

The Problem Back. John E. Kirkpatrick, San Francisc

Hospital Employees: Corridor Consultations or Heal Maintenance? Jean Spencer Felton, Oklahoma Cit

Wednesday, June 25—2 p. m.

JOINT MEETING WITH THE AERO MEDICAL ASSOCIATION

Medical Considerations of Exposure to Microwaves (Rada
C. I. Barron, Burbank, Cali

Discussion to be opened by Willoughby *J. Rothroc* Jr., Los Angeles.

New Life-Saving Ejection Escape Capabilities from Hig *Speed Aircraft in the U. S. Navy.*
W. M. Snowden, Washington, D.

Physical Changes over a Twenty-Year Period in One Hun dred Airline Captains. G. J. Kidera, Chicag

Preventive and Aviation Medicine in Private Practice.
Russell J. Vastine Jr., *Niles,* Mich.

The Manhigh Balloon Flight Program.
David G. Simons, Holloman Air *Force* Base, N. Me

Syncope in a Population of *Healthy Young* Adults: Incidence, Mechanisms, and Significance.
George Dermksian and Lawrence E. Lamb, Randolph Air Force Base, Texas.

The *Role of* Human Factors at the Air Force Flight Test Center.
Burt Rowen, Edwards Air Force Base, Calif.

Thursday, June 26—2 p. m.

JOINT MEETING WITH THE SECTION ON PEDIATRICS
IN MASONIC TEMPLE, AUDITORIUM

Symposium on Competitive Athletics in Children

The Educational Aspects of Athletics for Children.
Fred V. Hein, Chicago.

Competitive Athletics from the Viewpoint of the Parent.
("Mystery speaker"—a celebrated Hollywood father.)

Competitive Athletics for Children.
Jean Hoxie, Hamtramck, Mich.

Desirable Athletics for Children.
George Maksim, Washington, D. C.

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George B. Logan, Rochester, Minn.

The Role of Athletics in Physical Fitness Programs for Children. T. Campbell Goodwin, Cooperstown, N. Y.

The Implications of Longitudinal Study in Fitness Programs.
Robert W. McCammon and Alan W. Sexton, Denver.

SECTION ON RADIOLOGY

MEETS IN MARK HOPKINS HOTEL, PEACOCK ROOM

OFFICERS OF SECTION

Chairman—Wendell G. Scott, St. Louis.
Vice-Chairman—William W. Bryan, Atlanta, Ga.
Secretary—Traian Leucutia, Detroit.
Delegate—Eugene P. Pendergrass, Philadelphia.
Representative to Scientific Exhibit—Richard H. Chamberlain, Philadelphia.
Executive Committee—Leo G. Rigler, Los Angeles; Donald S. Childs, Syracuse, N. Y.; Wendell G. Scott; Traian Leucutia; and Eugene P. Pendergrass.

Tuesday, June 24—2 p. m.

JOINT MEETING WITH THE SECTION ON OBSTETRICS AND GYNECOLOGY IN CIVIC AUDITORIUM, POLK HALL

Problems in Hysterosalpingography.
Maurice Dufresne, Léon Gérin-Lajoie, and Roger Maltais, Montreal.

Hysterosalpingography: A Diagnostic Aid in Gynecology.
William W. Bryan and A. C. Richardson, Atlanta, Ga.

Discussion of papers by Drs. Dufresne, Gérin-Lajoie, and Maltais and Drs. Bryan and Richardson to be opened by C. Frederic Fluhmann, San Francisco.

A Clinical Evaluation of the Pelvoencephalogram.
E. L. King, Isadore Dyer, John A. King, and Milton J. Hoffman, New Orleans.

Discussion to be opened by D. Frank Kaltreider, Baltimore.

Symposium on Radiation Hazards

Common Sense in the Diagnostic Use of X-ray.
J. E. Miller and Gerald Swindell, Dallas, Texas.

Radiation Dosage to the Female Gonads During Diagnostic Roentgen Procedures.
George Cooper, W. Norman Thornton, and Kenneth Williams, Charlottesville, Va.

Radiation Hazards in the Practice of Obstetrics and Gynecology.
Bernard Roswit, Bronx, N. Y.

Reduction of Radiation Exposure in Obstetric Radiography.
John A. Campbell and John W. Beeler, Indianapolis.

Discussion of papers by Drs. Miller and Swindell; Drs. Cooper, Thornton, and Williams; Dr. Roswit; and Drs. Campbell and Beeler to be opened by Curt Stern, Berkeley, Calif.; George D. Davis, Rochester, Minn.; and James F. Nolan, Los Angeles.

Wednesday, June 25—9 a. m.

MARK HOPKINS HOTEL, PEACOCK ROOM

ELECTION OF OFFICERS

Chairman's Address: The Clinical Radiologist and How He is Meeting the Problems of Radiation Hazards.
Wendell G. Scott, St. Louis.

Mediastinal Masses of Neurogenic Origin.
Ted F. Leigh and H. Stephen Weens, Atlanta, Ga.

An Analysis of the Prognostic Significance of the Various Roentgen Manifestations of Bronchial Carcinoma.
Gwilym S. Lodwick and Theodore E. Keats, Columbia, Mo., and John Dorst, Iowa City.

Discussion of papers by Drs. Leigh and Weeks and Drs. Lodwick, Keats, and Dorst to be opened by Ivan J. Miller, San Francisco.

Roentgenography of the Breast.
S. M. Berger, Victor Kremens, and J. Gershon-Cohen, Philadelphia.

Clinical Irradiation with Use of a Grid, Stationary and Rotational.
Hirsch Marks, New York.

Discussion to be opened by B. H. Feder, *Long Beach, Calif.*

Isotope Circulation Studies in Congenital Heart Disease.
Richard H. Greenspan, Richard G. Lester, James F. Marvin, and Kurt Amplatz, Minneapolis.

Discussion to be opened by Leo G. Rigler, Los Angeles.

Hiatal Hernia: An Evaluation of Diagnostic Procedures.
Arno W. Sommer, Temple, Texas, and Charles L. Stevenson, Janesville, Wis.

The Radiologic Diagnosis of Splenic Trauma.
J. H. Woodruff Jr., Torrance, Calif.; R. E. Ottoman, Los Angeles; J. H. Simonton and J. T. Foster, Torrance, Calif.

Discussion of papers by Drs. Sommer and Stevenson and Drs. Woodruff, Ottoman, Simonton, and Foster to be opened by Howard P. Doub, Detroit, and Everett L. Pirkey, Louisville, Ky.

Thursday, June 26—9 a. m.

JOINT MEETING WITH SECTION ON DISEASES OF THE CHEST IN CALIFORNIA MASONIC MEMORIAL TEMPLE, AUDITORIUM

California and Taylor Streets

Symposium on Intrathoracic Lesions with Neurologic Manifestations

Moderator: Harold O. Peterson, Minneapolis.

Internist. Herman J. Moersch, Rochester, Minn.

Radiologists.
Leo H. Garland, San Francisco, and J. Paul Medelman, St. Paul.

Surgeons.
William M. Tuttle, Detroit, and Edwin B. Boldrey, San Francisco.

Symposium on Abnormalities of the Heart and Great Vessels

Moderator: Conrad R. Lam, Detroit.

Internist. J. Francis Dammann Jr., Charlottesville, Va.

Radiologists.
Charles T. Dotter, Portland, Ore., and Bernard J. O'Loughlin, Los Angeles.

Surgeons.
Denton A. Cooley, Houston, Texas, and Ormand C. Julian, Chicago.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

MEETS IN VETERANS WAR MEMORIAL, AUDITORIUM
Civic Center

OFFICERS OF SECTION

Chairman—FRANK GERBODE, San Francisco.
Vice-Chairman—CHARLES G. CHILD III, Boston.
Secretary—GUSTAF E. LINDSKOG, New Haven, Conn.
Delegate—GROVER C. PENBERTHY, Detroit.
Representative to Scientific Exhibit—JOHN H. MULHOLLAND, New York.
Executive Committee—WALTMAN WALTERS, Rochester, Minn.; WALTER G. MADDOCK, Chicago; FRANK GERBODE; GUSTAF E. LINDSKOG; and GROVER C. PENBERTHY.

Wednesday, June 25—9 a. m.

JOINT MEETING WITH SECTION ON ANESTHESIOLOGY IN VETERANS WAR MEMORIAL, AUDITORIUM

Civic Center

Symposium and Panel Discussion on Spinal Anesthesia

The Pharmacology of Compounds Used to Produce Spinal Anesthesia. R. M. FEATHERSTONE, Iowa City.

The Present Status of Spinal Anesthesia. NICHOLAS M. GREEN, New Haven, Conn.

Spinal Anesthesia from the Surgeon's Standpoint. ROBERT A. SCARBOROUGH, San Francisco.

Spinal Anesthesia, Arachnoiditis, and Paraplegia. SAMUEL I. JOSEPH and J. S. DENSON, Los Angeles.

Is Heat Sterilization of Drugs and Equipment for Regional Block Anesthesia a Necessity? L. DONALD BRIDENBAUGH JR., Seattle.

The Electromyogram in the Evaluation of Neurological Complications of Spinal Anesthesia. A. A. MARINACCI and CYRIL B. COURVILLE, Los Angeles.

Discussion and question and answer period.

Thursday, June 26—9 a. m.

BUSINESS MEETING

Chairman's Address. FRANK GERBODE, San Francisco.

Surgical Trauma to the Larger Bile Ducts: Prevention and Treatment.
N. FREDERICK HICKEN and A. JAMES MCALLISTER, Salt Lake City.
Discussion to be opened by H. J. MCCORKLE, San Francisco, and VERNON L. STEVENSON, Salt Lake City.

Coronary Artery Disease—Some New Concepts: Results Following Surgical Operation.
CLAUDE S. BECK, DAVID S. LEIGHNINGER, JESS BOND, and BERNARD BROFMAN, Cleveland.
Discussion to be opened by BURGESS L. GORDON, Albuquerque, N. Mex., and N. A. ANTONIUS, Newark, N. J.

Cardiac Arrest. HENRY SWAN, Denver.

The Effect of Surgery for the Primary Lesion in Breast Cancer.
BENJAMIN F. BYRD JR., SAMUEL E. STEPHENSON JR., and I. A. NELSON, Nashville, Tenn.
Discussion to be opened by EMILE HOLMAN, San Francisco, and WILLIAM LONGMIRE JR., Los Angeles.

The Repair of Tendon Injuries in the Hand.
PRESTON J. BURNHAM, Salt Lake City.
Discussion to be opened by LOT D. HOWARD JR., San Francisco.

Friday, June 27—9 a. m.

Results of Surgical Reconstruction in Exstrophy of the Urinary Bladder. KARL C. JONAS, Philadelphia.

The Problem of the Ruptured Diaphragm.
PHILIP E. BERNATZ, ALFRED F. BURNSIDE JR., and O. THERON CLAGETT, Rochester, Minn.
Discussion to be opened by JOHN F. HIGGINSON, Portland, Ore., and PAUL C. SAMSON, Oakland, Calif.

Pregnancy in the Patient with Ileostomy and Colectomy.
FRED O. PRIEST, R. K. GILCHRIST, and JOHN S. LO[illegible], Chicago.

Diagnosis and Management of the Rare Cause of Gastrointestinal Hemorrhage.
JAMES V. MALONEY, Los Angeles.

The Management of Acute Venous Thromboembolism.
WILLIAM G. ANLYAN and GEORGE D. DELAUGHTER, Durham, N. C.
Discussion to be opened by JOSEPH T. PAYNE, Seattle, and BROOKE ROBERTS, Philadelphia.

An Evaluation of the Jejunal Interposition Operation for Certain Disorders Involving the Cardioesophageal Junction.
GEORGE I. THOMAS and K. ALVIN MERENDINO, Seattle
Discussion to be opened by FRANK GERBODE, San Francisco.

SECTION ON UROLOGY

MEETS IN MASONIC TEMPLE, ROOM 2

Van Ness Avenue and Market Street

OFFICERS OF SECTION

Chairman—ROGER W. BARNES, Los Angeles.
Vice-Chairman—DEAN PARKER, Seattle.
SECRETARY—THOMAS A. MORRISSEY, New York.
Assistant Secretary—ROBERT LICH, Louisville, Ky.
Delegate—JAY J. CRANE, Los Angeles.
Representative to Scientific *Exhibit*—MILTON M. COPLAN, Miami, Fla.
Assistant Representative to Scientific Exhibit—E. F. POUTASSE, Cleveland.
Executive Committee—RUBIN H. FLOCKS, Iowa City, STANFORD W. MULHOLLAND, Philadelphia; ROGER W. BARNES, THOMAS A. MORRISSEY; and JAY J. CRANE.

Tuesday, June 24—2 p. m.

The Expectant Treatment of Ureteral Calculus.
SAMUEL S. BEIRSTEIN, Minneapolis
Discussion to be opened by J. Y. FEINSTEIN, Minneapolis.

The Role of the Ureter in the Pathogenesis of Ascending Pyelonephritis.
HERBERT S. TALBOT, West Roxbury, Mass.
Discussion to be opened by WYLAND F. LEADBETTER, Boston.

The Clinical Importance of Ureteral Duplication and Ectopy.
IAN M. THOMPSON and ARJAN AMAR, Ann Arbor, Mich
Discussion to be opened by B. LYMAN STEWART, Los Angeles, and STANFORD W. MULHOLLAND, Philadelphia.

Chronic Prostatitis: An Attempt at a Clinico-pathological Correlation.
ABEL J. LEADER and DAN M. QUEEN, Houston, Texas
Discussion to be opened by WALTER I. BUCHERT, Danville, Pa.

Irradiation Cystitis. THOMAS L. POOL, Rochester, Minn.
Discussion to be opened by EARL E. EWERT, Boston, and FRANZ BUSCHKE, Seattle.

Recent Trends in Urologic Surgery.
Tracy O. Powell, Los Angeles.

Perineal Urethral Diverticulum: A Complication of Ischialectomy.
A. Estin Comarr and Ernest Bors, Long Beach, Calif.

Wednesday, June 25—2 p. m.

BUSINESS MEETING; ELECTION OF OFFICERS

Chairman's Address: American Urology's Obligation to the World. Roger W. Barnes, Los Angeles.

Subcapsular Nephrectomy.
W. E. Kittredge and J. C. Fridge, New Orleans.
Discussion to be opened by George P. Dunn, San Francisco.

Bladder Regeneration After Subtotal Cystectomy for Treatment of Bladder Cancer.
Roger Baker, Timothy Kelly, Charles Putnam, and Timothy Tehan, Washington, D. C.
Discussion to be opened by Carl E. Ebert, Los Angeles.

Some Factors Influencing the Concentration of Radioactive Zinc in the Prostate.
George R. Prout, Miami, Fla., Michael Sierp and Willet F. Whitmore Jr., New York.
Discussion to be opened by Roderick D. Turner, Los Angeles, and Rubin Flocks, Iowa City.

Diagnosis and Treatment of Bladder Neck Obstruction with Emphasis on Postoperative Care.
Edward H. Ray and Luis Cervantes, Lexington, Ky.
Discussion to be opened by Ben D. Massey, Pasadena, Calif., and R. Theodore Bergman, Los Angeles.

Further Experience with the Radioisotope Test of Kidney Function. Chester C. Winter, Los Angeles.
Discussion to be opened by Glenn E. Sheline, San Francisco.

Thursday, June 26—2 p. m.

JOINT MEETING WITH THE SECTION ON PATHOLOGY AND PHYSIOLOGY IN CIVIC AUDITORIUM, ROOMS 301-303

Pyuria: Aid or Deterrence in the Diagnosis of Urinary Tract Infections? Jay P. Sanford, Dallas, Texas.
Discussion to be opened by Donald Charnock, Los Angeles, and Lowell A. Rantz, San Francisco.

Analysis of Six Hundred Renal Biopsies.
Robert M. Kark, Oak Park, Ill.; Conrad L. Pirani, Chicago; Victor E. Pollak and Robert C. Muehrcke, Oak Park, Ill.
Discussion to be opened by Robert Lich Jr., Louisville, Ky.

The Practical Value of Urinary Stone Analysis.
Julius H. Winer, Santa Monica, Calif.
Discussion to be opened by Donald F. McDonald, Seattle.

Fibrinolysis in Urological Patients.
Louis J. Lombardo Jr., Los Angeles.
Discussion to be opened by William Baurys, Sayre, Pa.

Panel Discussion on Carcinoma of the Lower Urinary Tract

Moderator: Elmer Hess, Erie, Pa.

Pathologists.
F. K. Mostofi, Washington, D. C.; Albert F. Brown, Glendale, Calif.; and Nathan B. Friedman, Los Angeles.

Urologists.
Rubin Flocks, Iowa City; Perry B. Hudson, New York; and Earl E. Ewert, Boston.

Radiologist. Franz Buschke, Seattle.

COLOR TELEVISION

CIVIC AUDITORIUM, LARKIN HALL

The program has been prepared by the local committee on television under the chairmanship of John B. Schaupp, San Francisco. The telecasts, sponsored and produced by Smith, Kline & French Laboratories of Philadelphia, will originate from the San Francisco Hospital. Operative surgical panels will be presented from 10 to 12 on Tuesday, Wednesday, and Thursday mornings, the clinics will be presented in the afternoons from Monday through Thursday. The surgical procedures will demonstrate the current approved techniques frequently performed by the general practitioner.

Monday, June 23—2 p. m.

2:00 p. m. Tonsils: Best In or Out?
Moderator: Robert Alway, San Francisco.
Panelists: Harold K. Faber and Frank Sooy, San Francisco, and Alden H. Miller, Los Angeles.

Tuesday, June 24—10 a. m.

10:00 a. m. Surgery Cases: Ventral Hernia; Radical Breast; and Gastric Resection.
Surgeons: Victor Richards, Carlton Mathewson, and Roy Cohn, San Francisco.

Tuesday, June 24—2 p. m.

2:00 p. m. Pediatrics Clinic: Infections in the Newborn: Uses and Abuses of Steroids; and Diagnostics (color pictures of childhood disorders with discussions).
Moderator: Edward B. Shaw, San Francisco.
Panelists: Henry Parmelee, Los Angeles; and Rex Whitworth and Moses Grossman, San Francisco.

4:00 p. m. Diagnostic Problem Clinic: A case will be presented for diagnosis and evaluation. The disease entity will be unknown.
Examining physician: Howard P. Lewis, Portland, Ore.
Moderator: Edwin L. Bruck, San Francisco.
Panelists: William Dock, Brooklyn, N. Y.; Paul C. Hodges, Chicago; and John W. Cline, San Francisco.

Wednesday, June 25—10 a. m.

10:00 a. m. Surgery Connected with Diagnostic Problems. Hemorrhoidectomy, Bunionectomy, and Hysterectomy.
Surgeons: Russell R. Klein, San Rafael, Calif., and Edward C. Hill and Edwin R. Schottstaedt, San Francisco.

Wednesday, June 25—2 p. m.

2:00 p. m. Psychiatry Clinic: Malpractice Suits, Causes and Prevention, Preventive Psychiatry for the General Clinician.
Moderator: Portia Bell Hume, Berkeley, Calif.
Panelists: Emmy Sylvester, San Francisco; Paul Holmer, Kentfield, Calif.; Floyd O. Due, Alameda, Calif.; Henry F. Albronda, San Francisco; Frank F. Tallman, Los Angeles; Joseph F. Sadusk, Alameda, Calif.; Richard Blum, San Francisco; and Bradley C. Brownson, San Mateo, Calif.

Thursday, June 26—10 a. m.

10:00 a. m. Surgery Cases: Thyroidectomy; Cholecystectomy; Hernia, inguinal.

Surgeons: LEON GOLDMAN, CLAYTON LYON, and BENSON B. ROE, San Francisco.

Thursday, June 26—2 p. m.

2:00 p. m. Dermatology Clinic: What's New? What's True? What to Do! Diaper Dermatitis; Infantile Eczema; Pigmentary Disorders; Warts; Fungous Infection; and Acne Vulgaris, with demonstration of skin planing.

Moderator: EUGENE N. FARBER, San Francisco.

Panelists: HARRY L. ARNOLD JR., Honolulu; PAUL M. CROSSLAND, CHARLES STEDMAN LINCOLN JR., RAY C. NORDSTROM, EDWARD J. RINGROSE, HAROLD M. SCHNEIDMAN, WALTER EDWARD WEBER, and GEORGE T. WILSON, San Francisco; THOMAS B. FITZPATRICK, Portland, Ore.; WALTER C. LOBITZ JR., Hanover, N. H.; and WALTER R. NICKEL and J. WALTER WILSON, Los Angeles.

GRAND ROUNDS CLOSED-CIRCUIT TELEVISION

Wednesday, June 25—6 p. m.

There will be a 90-minute closed-circuit television program originating from the San Francisco Meeting on Wednesday evening, June 25, from 6:00 to 7:30 p. m., Pacific Daylight Time. Sponsored by the Upjohn Company in cooperation with the American Medical Association, this program will be transmitted to physician audiences gathered in Boston, Chicago, Cleveland, Kalamazoo, Philadelphia, New York, and Syracuse. Physicians attending the meeting in San Francisco will have an opportunity of viewing this program in the Civic Auditorium area.

The first 30 minutes of the telecast will be devoted to outstanding highlights of the scientific events of the meeting. These will include excerpts from some of the papers and a rief tour of the Scientific Exhibit.

The remaining 60 minutes will be in the form of a Grand Rounds clinical session on the subject of diabetes. This session will emanate from the University of California School of Medicine under the chairmanship of PETER H. FORSHAM, Professor of Medicine. Patients illustrating some of the common problems encountered in diabetes will be presented. Attention also will be given to recent progress in the management of the diabetic patient and the role of oral hypoglycemic agents, their proper use, and the details of their clinical application.

MOTION PICTURE PROGRAM

CIVIC AUDITORIUM, PLAZA EXHIBIT HALL, ROOM 1

Monday to Friday, June 23-27

Following are some of the films which will be shown in the Plaza Exhibit Hall, Room 1, in Civic Auditorium, from 10 a. m. Monday to noon, Friday. A select group of outstanding foreign-made films chosen from the 1957 International Film Exhibition will be included on the program.

Human Gastric Function.
STEWART WOLF, Oklahoma City.

Breech Delivery.
BRUCE MAYES, Sydney, Australia.

Low Cervical Cesarean Section.
ROBERT B. WILSON, Rochester, Minn.

Kielland's Midwifery Forceps.
ALISTAIR GUNN, London.

Surgical Correction of Female Sterility.
CARLOS D. GUERRERO, Mexico City.

Hemorrhoids or Piles and the Early Detection of Recta Cancer.
A. LAWRENCE ABEL and H. GORDON UNGLEY, London

Esophageal Perforation in a Sword Swallower.
PHILIP THOREK, Chicago.

Termination of the Bile Duct.
JULIAN STERLING, Philadelphia.

Cholecystectomy and Operative Cholangiography.
JOEL BAKER and JOHN WALKER, Seattle.

The Surgical Treatment of Mitral Stenosis.
MILOSLAV KUCERA, Prague, Czechoslovakia.

Aneurysms of Abdominal Aorta: Surgical Consideration Based Upon Analysis of More Than Five Hundred Resected Cases.
MICHAEL E. DE BAKEY, DENTON A. COOLEY, and E STANLEY CRAWFORD, Houston, Texas.

The Mitral Valve: Dynamic Pathology and Surgery.
ROBERT P. GLOVER, JULIO C. DAVILA, and ROBERT C TROUT, Philadelphia.

Techniques of Angiography.
A. W. HUMPHRIES, Cleveland.

Cinefluorography of the Heart and Lungs.
ROBERT S. GREEN, Cincinnati.

Reconstitution of the Lung.
VETERANS ADMINISTRATION, Washington, D. C.

Congenital Atresia of the Esophagus.
WILLIAM L. RIKER, ARTHUR DE BOER, and WILLIS J POTTS, Chicago.

Surgical Reconstruction of Post-traumatic Laryngeal Stenosis
PAUL H. HOLINGER, PAUL W. GREELEY, KENNETH C JOHNSTON, and JOHN W. CURTIN, Chicago.

The Care and Treatment of Diabetic Feet.
W. E. REDFERN, W. L. LOWRIE, M. A. BLOCK, and B. E. BRUSH, Detroit.

Vaginal Repair of Urethrovaginal Fistula.
JAMES W. MERRICKS, BURNELL V. REANEY, CLARENCE C. CLOSE, and FRANK B. PAPIERNIAK, Chicago.

Urethral Catheters.
SAMUEL J. FOGELSON and VINCENT J. O'CONOR, Chicago.

Surgery for Tophaceous Gout.
WILLIAM A. LARMON, J. F. KURTZ, and E. A. MILLAR, Hines, Ill.

Coccidioidomycosis: Its Epidemiologic and Clinical Aspects.
VETERANS ADMINISTRATION, Los Angeles.

Intracranial Aneurysms.
RUDOLF PETER, Prague, Czechoslovakia.

Recognition and Management of Respiratory Acidosis.
REGINALD H. SMART, HURLEY L. MOTLEY, and JOSEPH F. BOYLE, Los Angeles.

Dynamics of Phagocytosis.
ARMINE T. WILSON, Wilmington, Del.

Structure and Function of the Middle Ear.
ICHIRO KIRIKAE, Tokyo.

Control of Severe Pain.
WILBUR BENSON, Nutley, N. J.

SPECIAL EVENING MOTION PICTURE PROGRAM

SHERATON-PALACE HOTEL, GOLD BALLROOM

Wednesday, June 25—8:30 p. m.

There will be a première showing of a film on *Traumatic Neurosis*. This is the third film in the Medical Legal series produced by the American Medical Association in cooperation with the American Bar Association. Introductory remarks will be made by DAVID B. ALLMAN, *President*, American Medical Association, and RAY A. BRONSON, American Bar Association.

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit will be located on the first and second floors of Civic Auditorium. It will open Monday, June 23, at 8:30 a. m. and will close Friday, June 27, at 12 noon. On the intervening days, the hours will be from 8:30 a. m. to 5:30 p. m.

The public is not admitted to the Scientific Exhibit. *Admission will be restricted to physicians only* from 8:30 a. m. to 12 noon on Tuesday, June 24, and Wednesday, June 25.

Each section of the Scientific Assembly has arranged a group of exhibits, as in former years, dealing with its respective specialty. Emphasis is placed, however, on broad aspects of the subjects shown, rather than on specialized aspects, so that all exhibits will be of general interest.

Special features include conferences on perinatal problems, diet, and pulmonary function, as well as demonstrations on fresh tissue pathology, mouth-to-mouth resuscitation for children and adults, and physical examination of physicians. Other features include exhibits on fractures, arthritis and rheumatism, medical history, and two prize-winning exhibits selected from the Student A. M. A. Meeting as well as two from the National Science Fair.

SPECIAL FEATURES

Student American Medical Association Exhibits

The Council on Scientific Assembly has arranged for the presentation of two exhibits selected from the Annual Meeting of the Student American Medical Association in Chicago to be shown in the Scientific Exhibit. One exhibit will be from the resident-intern group and one exhibit from the medical student group. The exhibits are presented with the cooperation of Lakeside Laboratories, Milwaukee.

Science Fair Exhibits

The Council on Scientific Assembly has arranged for the presentation of two exhibits selected from the National Science Fair in Flint, Mich., in May, to be shown in the Scientific Exhibit of the American Medical Association. The two high school students who have the best exhibits in the field of biology or medicine will accompany their exhibits and will demonstrate them during the week.

Special Exhibit on Fractures

The Special Exhibit on Fractures is presented under the auspices of the following Committee:

Ralph G. Carothers, Cincinnati, Chairman.
Harry B. Hall, Minneapolis.
Charles V. Heck, Chicago.

Demonstrations will be conducted simultaneously each morning and afternoon during the meeting in each of six booths on the following subjects:

Fractures Resulting from a Fall on the Outstretched Hand.
Fractures Encountered by the Front Seat Passenger in an Automobile Crash.
Fractures About the Elbow.
Fractures of the Lower End of the Radius.
Fractures of the Tibia and Fibula.
Fractures About the Ankle.

The demonstrations will deal with basic principles for the interest of physicians in general practice. A pamphlet dealing with the essential features of the exhibit will be distributed.

The following persons are among the demonstrators who will assist the Committee in the presentation of the exhibit:

Thomas A. Angland, Yakima, Wash.
W. Compere Basom, El Paso, Texas.
Floyd E. Bliven Jr., Augusta, Ga.
Roy E. Brackin, Winnetka, Ill.
Mack L. Clayton, Denver.
Robert H. Cofield, Covington, Ky.
L. J. Cordrey, Cleveland.
Lewis N. Cozen, Los Angeles.
Robert H. Denham Jr., South Bend, Ind.
F. Paul Duffy, Cincinnati.
Robert W. Florence, Tacoma, Wash.
Lee T. Ford, St. Louis.
R. T. Gallagher, Cincinnati.
Nicholas J. Giannestras, Cincinnati.
Morris E. Goldman, Lewiston, Maine.
Kenneth T. Hubbard, Oak Park, Ill.
Richard H. Jones, Minneapolis.
Edward H. Juers, Red Wing, Minn.
William J. Kisiel, Springfield, Mass.
Sydney N. Lyttle, Flint, Mich.
Andrew R. Mailer, Popular Bluff, Mo.
Robert Mazet Jr., Los Angeles.
James W. Miller, Seattle.
William R. Molony Jr., Los Angeles.
Glenn Moore, Flint, Mich.
Moore Moore Jr., Memphis, Tenn.
Frank G. Murphy, Chicago.
E. M. Neptune, Syracuse, N. Y.
Roland F. Neumann Jr., Minneapolis.
Theodore Norley, West Palm Beach, Fla.
Frederick G. Rosendahl, Minneapolis.
Edmund T. Rumble Jr., Callicoon, N. Y.
John C. Schmerge, Cincinnati.
William J. Stewart, Columbia, Mo.
S. Ralph Terhune, Birmingham, Ala.
Franklin V. Wade, Flint, Mich.

Special Exhibit on Fresh Tissue Pathology

The Section on Pathology and Physiology has arranged the Special Exhibit on Fresh Tissue Pathology with the cooperation of the San Francisco Pathological Society and the East Bay Pathological Society. Guest demonstrators include outstanding pathologists from many medical schools and laboratories in the United States. Fresh pathologic specimens will be supplied daily with the assistance of various hospitals and laboratories in the vicinity of San Francisco.

The local committee in charge of the exhibit consists of the following members:

Hamilton R. Fishback, Berkeley, Calif., Chairman.
Melvin B. Black, San Francisco.
Justin R. Dorgeloh, Piedmont, Calif.
Robert R. Wright, San Francisco.

Demonstrations will be conducted continuously on a definite schedule by a large corps of competent pathologists, including guest demonstrators from teaching institutions.

George D. Amromin, Chicago.
John J. Andujar, Fort Worth, Texas.
Donald L. Becker, Casper, Wyo.
Paul J. Breslich, Minot, N. D.
John H. Childers, Galveston, Texas.
Ralph C. Ellis, Ogden, Utah.

H. Russell Fisher, Los Angeles.
Nathan B. Friedman, Los Angeles.
Ellen D. Furey, Beaumont, Texas.
Wayne A. Geib, Rapid City, S. D.
Leslie R. Grams, San Jose, Calif.
Paul K. Hamilton Jr., Denver.
James B. Hutcheson, Dallas, Texas.
Leo Kaplan, Los Angeles.
J. D. Kirschbaum, San Bernardino, Calif.
Charles P. Larson, Tacoma, Wash.
William L. Lehman, Portland, Ore.
A. F. Lincoln, Denver.
Paul K. Lund, Seattle.
P. J. Melnick, San Fernando, Calif.
Jeff Minckler, Portland, Ore.
Vincent Moragues, Omaha.
Arnold K. Myrabo, Sioux Falls, S. D.
Gale R. Richardson, Minot, N. D.
William O. Russell, Houston, Texas.
Harry J. Sacks, Los Angeles.
John R. Schenken, Omaha.
Vinton D. Sneeden, Portland, Ore.
Reuben Straus, Burbank, Calif.
Merrill J. Wicks, Tacoma, Wash.
O. O. Williams, Phoenix, Ariz.
Samuel S. Zuckerman, Cheyenne, Wyo.

Special Exhibit on Pulmonary Function

The Special Exhibit on Pulmonary Function is presented by the Section on Diseases of the Chest in cooperation with the American College of Chest Physicians, the American Trudeau Society, the Industrial Medical Association, the American College of Cardiology, and the American Association of Inhalation Therapists, under the auspices of the following committee:

George R. Meneely, Nashville, Tenn., Chairman.
Albert H. Andrews Jr., Chicago.
Burgess L. Gordon, Albuquerque, N. Mex.
Edwin R. Levine, Chicago.

This year, for the first time, physiologic therapy as well as pulmonary function testing will be demonstrated. The exhibit and program of demonstrations has been developed and continued with the help of many, under the auspices of the following individuals and representatives of Government Services:

Osler Abbott, Atlanta, Ga.
Mortimer E. Bader, New York.
Richard A. Bader, New York.
Alvan L. Barach, New York.
Oscar J. Balchum, Nashville, Tenn.
Hollis Boren, Houston, Texas.
Ben V. Branscomb, Birmingham, Ala.
Robert Bruce, Seattle.
James J. Callaway, Nashville, Tenn.
Richard T. Cathcart, Philadelphia.
Aaron Cohen, San Francisco.
Julius Comroe Jr., San Francisco.
David W. Cugell, Chicago.
Seymour M. Farber, San Francisco.
Wilton M. Fisher, Washington, D. C.
Ward S. Fowler, Rochester, Minn.
Edward A. Gaensler, Boston.
W. F. Hamilton, Augusta, Ga.
J. W. G. Hannon, Washington, Pa.
Joseph H. Holmes, Denver.
Nolan L. Kaltreider, Rochester, N. Y.
Ross C. Kory, Wood, Wis.
John S. LaDue, New York.
Harold A. Lyons, Brooklyn, N. Y.
Joseph M. Merrill, Nashville, Tenn.
R. Drew Miller, Rochester, Minn.
Hurley Motley, Los Angeles.
Frank Princi, Cincinnati.
Donald Proctor, Baltimore.
Dickinson W. Richards Jr., New York.
Albert Roberts, Washington, D. C.
A. H. Russakoff, Birmingham, Ala.
Max S. Sadove, Chicago.
John J. Sampson, San Francisco.
G. W. H. Schepers, Ann Arbor, Mich.
John H. Seabury, New Orleans.
Maurice S. Segal, Boston.
Reginald H. Smart, Los Angeles.
William W. Stead, Gainesville, Fla.
Peter A. Theodos, Philadelphia.
J. F. Tomashefski, Columbus, Ohio.
Donald S. Tysinger Jr., Dothan, Ala.
H. S. Van Ordstrand, Cleveland.
Roger H. L. Wilson, San Francisco.
George Wright, Cleveland.

Representatives of Government Services

W. Clark Cooper, Cincinnati, U. S. Public Health Service.
Martin M. Cummings, Washington, D. C., Veterans Administration.
Ashton Graybiel, Pensacola, Fla., U. S. Navy.
James Wier, Denver, U. S. Army.
Juan Garcia Ramos, Silicosis Commission, Secretariat of Labor and Social Security, Mexico, D.F.

A "lung station" suitable for a hospital or clinic, is designed to aid in diagnosis, prognosis, therapy, and the evaluation of disability in pulmonary disease in much the same manner that a "heart station" serves the needs of clinicians concerned with heart disease.

Demonstrations will be presented each morning and afternoon, using patients in some cases, to show how pulmonary function tests and physiologic therapy may be conducted in the hospital and in the office. The moderator of the session will discuss clinical applications and will receive questions or comments from the audience. The following schedule has been arranged:

Monday, June 23

10:00 a.m.
Moderator: Maurice H. Segal, Boston.
Demonstrators: James J. Callaway, Nashville, Tenn.
John H. Seabury, New Orleans.

2:30 p.m.
Moderator: Alvan L. Barach, New York.
Demonstrators: Ben V. Branscomb, Birmingham, Ala.
Reginald H. Smart, Los Angeles.

Tuesday, June 24

10:00 a.m.
Moderator: Hurley Motley, Los Angeles.
Demonstrators: Joseph H. Holmes, Denver.
J. W. G. Hannon, Washington, Pa.

2:30 p.m.
Moderator: Burgess L. Gordon, Albuquerque, N. Mex.
Demonstrators: Osler Abbott, Atlanta, Ga.
Ross C. Kory, Wood, Wis.

Wednesday, June 25

10:00 a.m.
Moderator: Albert H. Andrews Jr., Chicago.
Demonstrators: Robert Bruce, Seattle.
J. F. Tomashefski, Columbus, Ohio.

2:30 p.m.
Moderator: W. F. Hamilton, Augusta, Ga.
Demonstrators: Oscar J. Balchum, Nashville, Tenn.
G. W. H. Schepers, Ann Arbor, Mich.

Thursday, June 26

10:00 a.m.
Moderator: Edwin R. Levine, Chicago.
Demonstrators: Max S. Sadove, Chicago.
Harold A. Lyons, Brooklyn, N. Y.

2:30 p.m.
Moderator: Ward S. Fowler, Rochester, Minn.
Demonstrators: Joseph M. Merrill, Nashville, Tenn.
Donald Proctor, Baltimore.

Friday, June 27

10:00 a.m.
Moderator: George R. Meneely, Nashville, Tenn.
Demonstrators: Roger H. L. Wilson, San Francisco.
Albert Roberts, Washington, D. C.

Exhibit Symposium on Perinatal Problems

The Sections on Anesthesiology, Obstetrics and Gynecology, and Pediatrics are cooperating in a program on perinatal problems, including a group of exhibits, together with resuscitation demonstrations each morning, and question and answer conferences each afternoon in an adjoining room, under the auspices of the following committee:

Hulda E. Thelander, Children's Hospital, San Francisco, Chairman.
Rex H. Whitworth, Children's Hospital, San Francisco.
Peter Cohen, University of California Hospital, San Francisco.
Roberts E. Orcutt, University of California Hospital, San Francisco.
Ruth T. Gross, Stanford Hospital, San Francisco.
Edwin L. Rushia, Augusta, Ga., ex officio.
Frederick H. Falls, River Forest, Ill., ex officio.
F. Thomas Mitchell, Memphis, Tenn., ex officio.

The following exhibits will be presented:

Perinatal Mortality and Morbidity.
George Cooley and Donald Berg, Committee on Maternal and Child Care, Council on Medical Service, American Medical Association, Chicago.

Perinatal Distress: Causes, Sequelae, and Evaluation.
Peter Gruenwald, Margaret Hague Maternity Hospital, Jersey City, N. J.

Posthemorrhagic Shock in the Newborn: An Emergency Responsibility at Delivery.
George Z. Wickster and Joseph R. Christina, Stritch School of Medicine of Loyola University, Chicago.

Perinatal Mortality Pathology.
Frederick H. Falls and Charlotte S. Holt, Illinois State Department of Public Health, Springfield, Ill.

Demonstrations on Resuscitation of the Newborn

These demonstrations will be presented daily each morning at 10 a. m. Facilities will be available for audience participation.

Conferences on Perinatal Problems

Question and answer conferences will be conducted each afternoon. Questions from the audience will be encouraged.

Monday, June 23—2 p. m.

Anticipation, Recognition, and Management of Problems in the Neonatal Period.
Chairman: Luigi Luzzatti, Stanford Hospital, San Francisco.
Participants: Roberts E. Orcutt, University of California Hospital, San Francisco; Forrest H. Adams, University of California at Los Angeles Hospital; and Pieter A. DeVries, University of California Hospital and Children's Hospital, San Francisco.

Tuesday, June 24—2 p. m.

Prematurity.
Chairman: Rex H. Whitworth, Children's Hospital, San Francisco.
Participants: Jane Schaefer, Children's Hospital, San Francisco, Ruth T. Gross and Carolyn Piel, Stanford Hospital, San Francisco.

Wednesday, June 25—2 p. m.

Hemolytic Disease of the Newborn.
Chairman: Ruth T. Gross, Stanford Hospital, San Francisco.
Participants: Edward C. Hill and Peter Cohen, University of California Hospital, San Francisco, and Ralph Wallerstein, University of California Hospital and Children's Hospital, San Francisco.

Thursday, June 26—2 p. m.

Infection in the Neonatal Period.
Chairman: Roberts E. Orcutt, University of California Hospital, San Francisco.
Participants: Valerie Hurst and Moses Grossman, University of California Hospital, San Francisco, and Theodore Montgomery, Public Health Service, Berkeley, Calif.

Conferences on Diet as a Preventive and Therapeutic Tool for the Doctor

Monday, June 23—1 p. m.

Diet in Cardiovascular-Renal Disease

Moderators: Charles S. Davidson, Boston, and Philip L. White, Chicago.

1:00 p. m. The Sodium Restricted Diet.
Maurice Sokolow, San Francisco.
1:55 p. m. Diet in Coronary Artery Disease.
William Dock, Brooklyn, N. Y.

2:50 p. m. Diet in Hypercholesteremia.
Laurance W. Kinsell, Oakland, Calif.
3:45 p. m. Diet in Renal Disease.
Charles S. Davidson, Boston.

Tuesday, June 24—1 p. m.

Diet in Certain Problems of Internal Medicine

Moderator: William J. Darby, Nashville, Tenn.

1:00 p. m. Diet in the Management of Allergies.
Albert H. Rowe, San Francisco.
1:50 p. m. Diet in the Management of Joint Diseases.
Howard S. Way, Napa, Calif.
2:40 p. m. Diet in the Management of Anemias.
Carl V. Moore, St. Louis.
3:30 p. m. Diet in the Management of Alcoholism.
Charles S. Davidson, Boston.
4:20 p. m. Diet in the Management of Diabetes.
Samuel Soskin, Los Angeles.

Wednesday, June 25—1 p. m.

The Nutritive Value of Foods

Moderator: George R. Cowgill, New Haven, Conn.

1:00 p. m. The Effect of Soil Fertility.
Leonard A. Maynard, New York.
1:50 p. m. The Effect of Processing.
David B. Hand, New York.
2:40 p. m. Enrichment and Fortification.
George R. Cowgill, New Haven, Conn.
3:30 p. m. The Balanced Diet.
V. P. Sydenstricker, Augusta, Ga.
4:20 p. m. The Need for Supplemental Vitamins and Minerals.
William J. Darby, Nashville, Tenn.

Thursday, June 26—9 a. m.

Diet in Health

Moderator: John B. Youmans, Nashville, Tenn.

9:00 a. m. Infant Feeding. Clement A. Smith, Boston.
9:45 a. m. Diet in Adolescence.
Robert L. Jackson, Columbia, Mo.
10:30 a. m. Diet in Pregnancy and Lactation.
J. G. Moore, Los Angeles.
11:15 a. m. Diet in Aging.
Salvatore P. Lucia, San Francisco.

Friday, June 27—9 a. m.

Diet and Weight Control

Moderator: Wendell H. Griffith, Los Angeles.

9:00 a. m. Motivation of the Patient.
Charles W. Tidd, Los Angeles.
9:45 a. m. Control of the Appetite.
Sherman M. Mellinkoff, Los Angeles.
10:30 a. m. Reducing Diets.
Leela S. Craig, San Francisco.
11:15 a. m. Weight Control in Disease.
Grace A. Goldsmith, New Orleans.

History of Medicine

Exhibits on the history of medicine are presented with the cooperation of the Section on Military Medicine, E. R. Squibb and Sons, and Parke, Davis & Company.

A Century of Naval Medicine.
United States Navy and E. R. Squibb and Sons.
An exhibit in honor of Assistant Surgeon E. R. Squibb, U. S. Navy.

History of the Medical Department, United States Army in World War II.
John Boyd Coates Jr., Walter Reed Army Medical Center, Washington, D. C.

A History of Medicine in Pictures.
Parke, Davis & Company, Detroit.
Twelve original oil paintings, four of which are exhibited for the first time, depict major events and personalities in the medical profession from 3,000 B. C. to 1,550 A. D. This continuing series is directed by George A. Bender and painted by Robert A. Thom. Dr. Erwin H. Ackerknecht, Professor and Director of the Institute of the History of Medicine and Biology, University of Zurich, Switzerland, is the advisor.

Exhibit Symposium on Arthritis and Rheumatism

The exhibit symposium on arthritis and rheumatism has been arranged by the following special committee from the American Medical Association in cooperation with the American Rheumatism Association and the Arthritis and Rheumatism Foundation.

John W. Sigler, Detroit, Chairman.
Donald F. Hill, Tucson, Ariz.
L. Maxwell Lockie, Buffalo.

A consultation booth will be available where physicians may discuss problems regarding their patients afflicted with these diseases.

Evaluation of Therapy in Rheumatoid Arthritis.
Charley J. Smyth, Robert L. Johnson, and Glenn M. Clark, University of Colorado School of Medicine, Denver.

Hemophilic Arthritis.
Gerald P. Rodnan, Thomas D. Brower, Jessica H. Lewis, Joseph E. Warren, and Lewis E. Etter, University of Pittsburgh School of Medicine.

Gold in Rheumatoid Arthritis.
L. Maxwell Lockie and Harold Robins, University of Buffalo School of Medicine, Buffalo.

Modern Concepts in the Management of Gouty Arthritis.
John H. Talbott and Donald M. Wilson, University of Buffalo School of Medicine, Buffalo.

Improved Antirheumatoid Chrysotherapy.
Richard T. Smith, William P. Peak, Kenneth M. Kron, Irvin F. Hermann, and Russell A. Del Toro, Benjamin Franklin Clinic, Philadelphia.

The Importance of Arthritis to You: A Knowledge of Arthritis is Necessary if You Practice.
Cornelius H. Traeger, Roosevelt Hospital and Hospital for Special Surgery, New York.

Chloroquine in Rheumatoid Disease: Five Years Experience with Continuous Therapy.
A. W. Bagnall, University of British Columbia Medical School, Vancouver, Canada.

The Therapy of Rheumatoid Arthritis.
William Rawls, St. Clare's Hospital, New York, and Irvin F. Hermann, Benjamin Franklin Clinic, Philadelphia.

Salicylate Therapy in Rheumatic Diseases.
Theodore B. Bayles and Heinrich Tenckhoff, Robert Breck Brigham Hospital, Boston.

Diseases of the Connective Tissues.
Bernard M. Norcross and Salvatore R. LaTona, University of Buffalo School of Medicine and Buffalo General Hospital, Buffalo.

Intrasynovial Steroid Therapy.
Joseph L. Hollander, Ernest M. Brown Jr., Ralph A. Jessar, Nathan M. Smukler, and J. Rush Shanahan, University of Pennsylvania School of Medicine and Hospital, Philadelphia.

Information on Arthritis: Aids to the Physician and Information for the Patient.
Russell L. Cecil and W. R. Lamont-Havers, The Arthritis and Rheumatism Foundation, New York.

Do You Have a Question, Doctor?
Donald F. Hill, Tucson, Ariz.; L. Maxwell Lockie, Buffalo; and John W. Sigler, Detroit.

Annual Physical Examinations for Physicians

"An Annual P. E. for Every M.D." will be presented by the Section on General Practice with the cooperation of the American Academy of General Practice, the American College of Cardiology, and the National Tuberculosis Association. Acknowledgment is made to the Sanborn Company for electrocardiograph equipment and to the General Electric X-Ray Corporation for x-ray equipment.

The Chairman of the committee in charge of the demonstrations is Charles E. McArthur, Olympia, Wash.

The following examinations will be made in an area set aside for the purpose in the exhibit hall:

Electrocardiograms.
Chest X-rays.

A competent corps of specialists will be on duty at all times to interpret the findings of the various tests.

SECTION EXHIBITS

Each of the 21 sections of the Scientific Assembly has arranged a group of exhibits dealing with the various branches of medicine.

Section on Anesthesiology

The representative to the Scientific Exhibit from the Section on Anesthesiology is Edwin L. Rushia, Augusta, Ga. The section is cooperating in the demonstrations on perinatal problems.

The Emergency Cart.
Max S. Sadove, Anita E. Rapoport, and Arthur T. Shima, University of Illinois Research and Educational Hospitals, Chicago.

Ganglionic Blockade and Its Effects on the Incidence of Acute Renal Damage.
Antonio Boba, Samuel R. Powers Jr., and Arthur A. Stein, Albany Medical College of Union University, Albany, N. Y.

Circulatory Effects of Anesthetic Agents in Man.
Grant Fletcher, Monterey, Calif., and John W. Pender, Palo Alto, Calif.

The Effect of Edrophonium on Prolonged Apneas Following Succinylcholine.
Harold L. Engel, Samuel I. Joseph, and J. S. Denson, Los Angeles County Hospital, University of Southern California School of Medicine and College of Medical Evangelists, Los Angeles.

Respiratory Stimulants.
John Adriani and Bobby Smith, Charity Hospital and Louisiana State University School of Medicine, New Orleans.

Continuous Monitoring of Circulation During Surgery.
Dante Bizzarri and Joseph Giuffrida, Columbus and Elmhurst General Hospitals, and New York Medical College, New York.

Hypnoanesthesia in Obstetrics and Surgery.
William S. Kroger, Chicago Medical School, Chicago.

Regional Nerve Blocks of the Upper Extremity for Surgery of the Hand: New Block of the Great Nerves of Upper Arm.
Preston J. Burnham, Utah Crippled Children's Service, University of Utah College of Medicine, and St. Mark's Hospital, Salt Lake City.

Section on Dermatology

The representative to the Scientific Exhibit from the Section on Dermatology is Stanley E. Huff, Evanston, Ill.

Fibrin Foam Treatment of Depressed Scars.
Arthur S. Spangler, Harvard Medical School, Massachusetts General and Peter Bent Brigham Hospitals, Boston.

A New Penetrating Base with Special Reference to the Nails.
Cleveland J. White and Anton Vogel Jr., Stritch School of Medicine of Loyola University, and Thomas C. Laipply, Northwestern University Medical School, Chicago.

Biochemical, Clinical, Genetic and Experimental Study of Several Diverse Lipoprotein Diseases.
Walter D. Block, Mark Allen Everett, Frederick A. J. Kingery, and Arthur C. Curtis, University of Michigan Medical School, Ann Arbor, Mich.

The Galvanic Skin Response: Standardization and Possible Applications in Dermatology.
Daniel J. Perry and George E. Mount, University of California at Los Angeles School of Medicine, Los Angeles.

Pruritus: A Review of Etiology and Treatment.
Eugene P. Schoch Jr., Austin, Texas, and Arthur G. Schoch and Lee J. Alexander, Southwestern Medical School, Dallas, Texas.

Pathways of Vitamin A in the Skin.
Theodore Cornbleet and Ruven Greenberg, University of Illinois College of Medicine, Chicago.

Section on Diseases of the Chest

The representative to the Scientific Exhibit from the Section on Diseases of the Chest is Edwin R. Levine, Chicago. The Section is also sponsoring the Special Exhibit on Pulmonary Function.

Misleading Thoracic Roentgenograms.

A. J. Bruwer, C. H. Hodgson and J. A. Callahan, Mayo Clinic and Mayo Foundation, Rochester, Minn.

A Tuberculin Skin Test for Every Patient: Chest X-ray for Every Reactor.

Julius Wilson, National Tuberculosis Association, American Trudeau Society, New York.

Philadelphia Pulmonary Neoplasm Research Project.

Katharine R. Boucot, David A. Cooper, William Weiss, Thomas F. Nealon Jr., Donald J. Ottenberg, and Peter A. Theodos, Philadelphia.

Mycobacterial Diseases and Their Causes: Varieties of Acid-Fast Bacilli and Their Pathogenicity.

Emil Bogen and Seymour Froman, Olive View Sanatorium, Olive View, Calif.

A Physiological Approach to the Medical Management of Bronchopulmonary Disease.

Gustav J. Beck, Columbia University College of Physicians and Surgeons and Presbyterian Hospital, New York.

Surgical Anatomy of the Coronary Arteries.

Angelo M. May, Mount Zion and French Hospitals, San Francisco.

Bronchopulmonary Problems in Pediatrics: The Physiologic-Pathologic-Clinical Relationships.

Roy F. Goddard, Ulrich C. Luft, and Thomas L. Chiffelle, Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex.

Left Heart Catheterization.

G. H. Lawrence and R. M. Paine, The Mason Clinic, Seattle.

Bronchogenic Cysts in Patients Presumed To Have Pulmonary Tuberculosis.

Neil C. Andrews, A. J. Christoforidis, and Philip C. Pratt, Ohio Tuberculosis Hospital, Ohio State University College of Medicine, Columbus.

The Significance of the Fibrous Skeleton of the Heart in Mitral Valve Surgery.

George D. Geckeler, William Likoff, R. C. Truex, Henry T. Nichols, Houck E. Bolton, Dryden P. Morse, Joseph F. Uricchio, Harry Goldberg, Clemente Oca, Jacob Zimmerman, and Charles P. Bailey, Bailey Thoracic Clinic and Hahnemann Medical College and Hospital, Philadelphia.

Correction of Intracardiac Defects.

Herbert Sloan, Joe D. Morris, and Aaron Stern, University of Michigan Medical School, Ann Arbor, Mich.

Lung Cancer: Management by Interstitial Irradiation.

William L. Watson, Ulrich K. Henschke, John L. Pool, William G. Cahan, Raymond K. Luomanen, Eugene E. Clifton, and John T. Goodner, Memorial Center for Cancer and Allied Diseases, New York.

Section on Experimental Medicine and Therapeutics

The representative to the Scientific Exhibit from the Section on Experimental Medicine and Therapeutics is Joseph F. Ross, Los Angeles.

Coronary Artery Disease: New Clinical and Experimental Observations.

Myron Prinzmetal, Rexford Kennamer, Naci Bor, and Takashi Wada, Institute for Medical Research, Cedars of Lebanon Hospital and University of California School of Medicine, Los Angeles.

Electrolytes and the Heart: Clinical Applications in Pulmonary Edema, Arrhythmias, and Coronary Disease.

Richard S. Gubner, Harold Kallman, and Donald J. Behr, Equitable Life Assurance Society of the United States and Kings County Hospital, New York.

Antihypertensive Action of the Antimicrobial Agent, Furazolidone.

Benjamin Calesnick, Hahnemann Medical College and Hospital of Philadelphia.

Cardio-Salutary Effects of Mephentermine.

M. J. Oppenheimer, P. R. Lynch, George H. Stewart, and M. F. Wilson, Temple University School of Medicine, Philadelphia.

Conditioned Vasomotor Reactions: Their Detection and Control.

Travis Winsor, Youssef K. Mawardi, and Harold Karpman, University of Southern California School of Medicine, Los Angeles.

A New Approach to the Therapy of Hypertension: A Hypotensive Agent with Central Nervous System and Ganglionic Action.

Richard F. Tislow, Philadelphia, Donald K. Eckfeld, Michael J. Hosko Jr., Sue P. Kouzmanoff, and Patricia N. Townsend, Wyeth Institute for Medical Research, Radnor, Pa.

Physiologic Effects of Buccally Given Proteases.

Irving Innerfield, Harold Shub, and Linn J. Boyd, New York Medical College–Metropolitan Medical Center, New York.

The Use of the Enzyme Plasmin in Clinical Therapy.

H. O. Singher, R. V. Chapple, and D. S. Pattison, Ortho Research Foundation, Raritan, N. J.

Bowel Normalization.

Gordon McHardy and Robert J. McHardy, Louisiana State University School of Medicine and Browne McHardy Clinic, New Orleans.

What is Chelation? Medical Applications of Metal-Binding Agents.

Marvin John Seven and L. Audrey Johnson, Hahnemann Medical College and Hospital of Philadelphia, Philadelphia.

Comparative Testing of Daytime Sedatives and Hypnoti Medications.

Robert C. Batterman, Arthur J. Grossman, Paul Leifer, and George J. Mouratoff, New York Medical College–Metropolitan Medical Center, New York.

The Antibacterial Sulfonamides: Comparative Studies.

William P. Boger, Norristown State Hospital, Norristown, Pa.

Relation of Steroid Structure to Function: Improvement on Natural Steroids Through Alteration of Chemical Structure.

Hubert C. Peltier, Harold L. Upjohn, Robert O. Stafford, and Robert H. Levin, The Upjohn Company, Kalamazoo, Mich.

Cancer Cells in the Circulating Blood.

Alvin L. Watne, Stuart S. Roberts, Ruth G. McGrath, Elizabeth A. McGrew, and Warren H. Cole, University of Illinois College of Medicine, Chicago.

Phenylbutazone: Management of Venous Thrombosis with an Anti-inflammatory Agent.

Irwin D. Stein, Mount Vernon, N. Y.

The Endocrines and Liver in Lipid Mobilization.
Joseph Seifter, Chris J. D. Zarafonetis, and David H. Baeder, Wyeth Institute for Medical Research and Temple University School of Medicine, Philadelphia.

Experiences with the New Anticoagulant Phenprocoumon.
Robert E. Ensor and H. Raymond Peters, Mercy Hospital, University of Maryland School of Medicine, Baltimore.

Triamcinolone Therapy in Chronic Intractable Bronchial Asthma.
Emanuel Schwartz and Louis Levin, The Long Island College Hospital and State University of New York, College of Medicine at New York City.

Hypometabolism: A New Approach to Diagnosis and Treatment.
Jack A. Adelman, San Antonio, Texas.

Two-Way Radio Conferences: A New Method for Postgraduate Education.
Frank M. Woolsey Jr., and William P. Nelson III, Albany Medical College, Albany, N. Y.

Statistical Evaluation of Prolonged Release Drugs.
Leo J. Cass and Willem S. Frederik, Harvard University and Long Island Hospital, Boston.

Behavorial Analysis of Various Central Stimulants.
Dom V. Finochhio and Jacqueline van de Kamp, Ciba Pharmaceutical Products Inc., Summit, N. J.; Ernst Sigg, Ardsley-on-the-Hudson, New York; and Jurg A. Schneider, Maywood, N. J.

Section on Gastroenterology and Proctology

The representatives to the Scientific Exhibit from the Section on Gastroenterology and Proctology are George Gordon McHardy, New Orleans, and Willard H. Bernhoft, Buffalo.

Clinical Experience with the Intravenous Secretin Test.
Arthur P. Klotz, Robert S. Mosser, Ludwald O. P. Perry, and Hamdi Aktan, University of Kansas Medical Center, Kansas City, Kan., and Veterans Administration Hospital, Kansas City, Mo.

Color Photomicrographs in Teaching Recognition of the Intestinal Parasites.
Francis M. Spencer, San Angelo Medical and Surgical Clinic, San Angelo, Texas, and Lee S. Monroe, Scripps Clinic and Research Foundation, La Jolla, Calif.

Primary Neoplasms of the Small Bowel.
A. C. Broders Jr., N. C. Hightower Jr., R. R. White, J. C. Stinson, W. H. Hunt III, and Henry Laurens Jr., Scott and White Clinic and Scott, Sherwood and Brindley Foundation, Temple, Texas.

Effective Broad-Spectrum Intestinal Anthelmintic Activity of Dithiazanine.
J. C. Swartzwelder, W. W. Frye, J. P. Muhleisen, R. Lampert, J. H. Miller, and A. Pena Chavarria, Louisiana State University School of Medicine and Veterans Administration Hospital, New Orleans, and State Colony and Training School, Pineville, La.

The Treatment of Nonspecific Ulcerative Proctitis by the Topical Application of the Corticosteroids.
Marcel Patterson and John McGivney, University of Texas Medical Branch, Galveston, Texas.

The Gastric Analysis: Its Diagnostic and Therapeutic Implications.
J. Alfred Rider, Hugo C. Moeller, Joyce Swader, Lourdes O. Accaoili, Richard G. Devereaux, Jennie Lee, Ernesto Puletti, and John O. Gibbs, University of California Medical Center, San Francisco.

Cytological Evaluation of Gastric Lesions.
William T. Arnold, James Hampton, Walter Olin, Henry Glass, and Catherine Carruth, Hermann Hospital, Houston, Texas.

Bile Pigments of Icteric Serum.
J. L. Bollman, F. F. Whitcomb Jr., H. N. Hoffman II, and H. R. Butt, Mayo Clinic and Mayo Foundation, Rochester, Minn.

Malabsorption Syndrome.
H. Marvin Pollard, Robert J. Bolt, and Arthur B. French, University of Michigan Medical School, Ann Arbor, Mich.

Complete Nutriment in Therapy of Peptic Ulcer.
Asher Winkelstein, New York.

The Carcinoid Story.
H. Mark Young and Gordon Osborne, College of Medical Evangelists, Los Angeles.

An Evaluation of Anticholinergic-Tranquilizing Agents in Peptic Ulcer Therapy.
John S. Atwater and James M. Carson, Atlanta, Ga.

Acid Secretion and the Parietal Cell Mass.
I. N. Marks, S. A. Komarov, and Harry Shay, Fels Research Institute, Temple University Medical School, Philadelphia.

Studies on Ulcer Pain.
E. Clinton Texter Jr., Hubbard W. Smith, Gaston Vantrappen, Martin Liemer, Junko Ikeya, and Clifford J. Barborka, Veterans Administration Research Hospital and Northwestern University Medical Center, Chicago.

Suppressions of Hyperchlorhydria Induced by Prednisone and Reserpine.
John V. Carbone, Daniel Liebowitz, and Peter H. Forsham, University of California Medical Center, San Francisco.

Concept and Management of Gastritis.
Emmanuel Deutsch, Tufts College Medical School, Boston.

Ulcerative Colitis: Remote and Local Manifestations.
J. A. Clifton, R. C. Hickey, G. H. M. Thornton, and R. T. Tidrick, State University of Iowa College of Medicine, Iowa City.

Nitrofurazone in Anorectal Wound Healing.
Leon Banov Jr., Medical College of South Carolina, Charleston.

Peritoneoscopy in Gastroenterologic Diagnosis.
Fernando Villa, Shibli Canahuati, and Frederick Steigmann, Hektoen Institute for Medical Research of Cook County Hospital and University of Illinois College of Medicine, Chicago.

The Effects of Iproniazid on the Gastrointestinal Tract.
Melvin M. Brody and Frank M. Goetz, Veterans Administration Hospital and University of Southern California School of Medicine, Los Angeles.

Pentobarbital: A Neglected Antispasmodic.
Charles W. Hock, Augusta, Ga.

Section on General Practice

The representative to the Scientific Exhibit from the Section on General Practice is I. Phillips Frohman, Washington, D. C. The Section is conducting physical examinations for physicians.

Clinical Investigation in the General Physician's Practice: Treatment of Hypochromic Anemia.
I. Phillips Frohman, Washington, D. C.

Iproniazid for the Elderly.

Edward Settel, Forest Hills Nursing Home, Forest Hills, N. Y.

Chloroquine Therapy in Rheumatoid Arthritis.

Robert E. Rinehart, Rinehart Clinic, Wheeler, Ore.

The Cardiovascular Dynamics of Bowel Function.

Alfred Halpern, Norman Shaftel, David Selman, and Herbert Birch, The Stuyvesant Polyclinic, New York.

Examination of the Rectum and Sigmoid.

E. Scott Hill, H. A. Press, Gwen Converse, and Carmine Mangano, American Cancer Society, New York.

The Family Physician's Responsibility to the Cerebral Palsied Patient.

Charles F. McKhann, United Cerebral Palsy Association, Inc., New York.

Factors That Influence Anticoagulant Therapy.

Shepard Shapiro and Samuel M. Gordon, New York University College of Medicine and Endo Laboratories, New York.

Blood Smears: Their Value in General Diagnosis.

E. D. Bayrd and A. B. Hagedorn, Mayo Clinic and Mayo Foundation, Rochester, Minn.

Alcoholics Anonymous.

Herbert M., General Service Board of Alcoholics Anonymous, New York.

Anxiety: A Therapeutic Approach.

Arthur Bernstein and Franklin Simon, Newark Beth Israel Hospital, Newark, N. J.

A New Agent in the Treatment of Allergic Disorders. A Double-Blind Study.

Jerome Miller, Skin and Cancer Hospital, Temple University School of Medicine, Philadelphia.

Preserving the Diabetic Foot from a Triple Threat.

W. L. Lowrie, H. L. Johnson, W. E. Redfern, J. B. Bryan, F. W. Whitehouse, and E. A. Kish, Henry Ford Hospital, Detroit.

Clinical Pictures of Fluid Imbalances.

W. D. Snively Jr., Michael J. Sweeney, and W. L. Wessner, St. Mary's Hospital, Evansville, Ind.

Clinical Pharmacologic Evaluation of Diuretics.

Arthur C. DeGraff, Herbert S. Kupperman, Leonard B. Gutner, Walter Newman, and Lawrence Kryle, New York University–Bellevue Medical Center and the Bronx Veterans' Administration Hospital, New York.

Strike Back at Stroke: Early Mobilization of the Stroke Patient.

Paul Q. Peterson, S. D. Pomrinse, Bernard D. Daitz, Chronic Disease Program, Public Health Service, and Josephine J. Buchanan, District of Columbia General Hospital, Washington, D. C.

The Adrenocorticotropic Hormone: Chemistry, Pharmacology, and Therapeutic Applications.

Kenneth W. Thompson and Reynold C. Merrill, Orange, N. J.

Occipitocervical and Low Back Pain.

George S. Hackett, Canton, Ohio.

Hearing Evaluation in General Practice.

Kinsey M. Simonton, Rochester, Minn., Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology.

Educational Use of Closed Circuit Television: The Psychiatric Training of General Practitioners.

Charles E. Goshen, General Practitioner Education Project, American Psychiatric Association, Washington, D. C.

Allergy to Stinging Insects.

Robert A. Stier and Robert F. E. Stier, Spokane, Wash.

Section on Internal Medicine

The representative to the Scientific Exhibit from the Section on Internal Medicine is Henry T. Ricketts, Chicago.

Radioiodine Treatment of Paroxysmal Tachycardia.

Eliot Corday, Herbert Gold, John Williams, and Henry L. Jaffe, Institute for Medical Research Cedars of Lebanon Hospital, Los Angeles.

A New Method of Recording Heart Sounds.

Raymond P. Seven and Harry J. Venema, Wheaton, Ill.

Fluoridation and Its Relationship to Musculoskeletal Diseases.

Charles LeRoy Steinberg, Frank A. Smith, and Harold C. Hodge, Rochester General Hospital and University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

The Scintillation Camera: A New Method for Visualizing the Distribution of Gamma-Ray-Emitting Isotopes.

Hal O. Anger, Donner Laboratory and Radiation Laboratory, University of California, Berkeley, Calif.

Drug Therapy of Hypertension.

Marvin Moser and Alice I. Macaulay, Grasslands Hospital, Valhalla, N. Y.

The Ambulatory Patient with Hypertension: An Approach to Office Management.

Burton M. Cohen, St. Elizabeth's Hospital, Elizabeth, N. J.

Hypertension: Newer Aspects of Therapy and Effects upon Vascular Deterioration.

John R. Beem, Nelson H. Schimmel, Leonard M. Dreifus, James B. Donaldson, and John H. Moyer, Hahnemann Medical College and Hospital of Philadelphia, Philadelphia.

Renal Artery Hypertension: A Correctible Clinical Condition.

Paul T. DeCamp, Robert Birchall, and Hugh Batson Jr., Ochsner Clinic, New Orleans.

Linear Vectorcardiography.

David C. Levinson, Herbert Shubin, and Louis Fields, Cedars of Lebanon Hospital, Los Angeles.

Serum Clarification Studies with Sublingual Heparin.

Harvey L. Fuller, The Fuller Medical Group, Baltimore.

Cardiac Valvular Dynamics: Anatomic, Physiologic, and Pathologic Studies.

Julio C. Davila, Robert G. Trout, Joseph E. Sunner, and Robert P. Glover, The Thoracic and Cardiovascular Research Laboratory at Presbyterian Hospital, Philadelphia.

Uric Acid Metabolism in Health and Disease.

Augustus Gibson, Elmer Alpert, M. J. Finkel, and Charles E. Lyght, Merck Sharp & Dohme Research Laboratories, West Point, Pa., and Rahway, N. J.

Diagnosis and Treatment of Pulmonary Embolism.

Harold L. Israel, Dick D. Harrell, and Albert Sheffer, Graduate Hospital of the University of Pennsylvania, Philadelphia.

A New Dietary Management for Hypercholesterolemia.

P. A. Boyer Jr., J. T. Lowe, Pitman-Moore Company, and R. W. Gardier and J. D. Ralston, Central State Hospital, Indianapolis.

Section on Ophthalmology

The representative to the Scientific Exhibit from the Section on Ophthalmology is Frank W. Newell, Chicago.

The Evolution of Orbital Implants.

Wood Lyda and James L. Hargiss, University of Washington School of Medicine and Seattle Eye Clinic, Seattle.

Corticosteroids in Eye Disease—1958.

Arnold S. Breakey and Conrad Berens, New York University Postgraduate Medical School, New York, and John H. King Jr., Washington Clinic, Washington, D. C.

Congenital Anomalies of the Anterior Segment.

Frederick C. Cordes, Robert N. Shaffer, and Ariah Schwartz, University of California Medical Center, San Francisco.

Electron Microscopy of Ocular Tissue.

L. K. Garron, M. J. Hogan, W. K. McEwen, and M. L. Feeney, University of California Medical Center, San Francisco.

Common Ocular Problems.

Dan M. Gordon, New York Hospital, Cornell Medical Center, and the L. Margolyes League, New York.

Dacryocystography.

Benjamin Milder, Washington University School of Medicine, St. Louis, and Byron Demorest, Sacramento, Calif.

Electron Microscopy of the Epithelium of the Ciliary Body.

George K. Smelser and George D. Pappas, Columbia University College of Physicians and Surgeons, New York.

Plastic Artificial Eye Restorations.

Mervin C. Cleaver, Ellis P. Simpson, Walter G. Spohn, and Kurt Goldstrum, Veterans Administration, Washington, D. C.

Studies of the Trabecular Meshwork of Normal and Glaucomatous Eyes.

Milton Flocks and E. Homer Brugge, Stanford University School of Medicine, San Francisco.

Human Toxoplasmosis.

Michael J. Hogan, Ann Lewis, Phyllis Zweigart, and Joan Esperson, University of California School of Medicine, San Francisco.

Histology and Mechanism of Filtering Operations.

C. C. Teng, H. H. Chi, and H. M. Katzin, The Eye Bank for Sight Restoration, Inc., New York.

Diseases of the Macula: Basic Histopathologic Processes in Retina, Pigment Epithelium and Choroid.

Bertha A. Klien, University of Chicago, The School of Medicine, Chicago.

Electromyography of Human Extraocular Muscles.

Arthur Jampolsky, Edward Tamler, Elwyn Marg, William Houwling, and Wilmer Renner, Stanford University School of Medicine, San Francisco.

Section on Orthopedic Surgery

The representative to the Scientific Exhibit from the Section on Orthopedic Surgery is James I. Kendrick, Cleveland.

Comparison of Myelography and Diskography in Diagnosis of Low Back Disability.

Norman M. Harris, Donald deF. Bauer, and Anthony J. Smith, Coos Bay, Ore.

Chemical Osteosynthesis.

Michael P. Mandarino and Joseph Salvatore, Hahnemann Medical College and Hospital of Philadelphia, Philadelphia.

Vertebral Body Fusion: Spondylolisthesis and Ruptured Cervical Disks.

Ralph B. Cloward, Honolulu.

Analysis and Management of Paraosteoarthropathy in Neurologic Disease.

Lee J. Cordrey and James H. Christie, Highland View Hospital and Western Reserve University Medical School, Cleveland.

Tarsometatarsal Fracture Dislocations.

Hugh S. Collett, Thomas K. Hood, and Richard E. Andrews, Elko Clinic, Elko, Nev.

Circulatory System Changes Associated with Orthopedic Conditions (by Decades).

Donald S. Miller and Rowlin L. Lichter, Chicago Medical School and Cook County Hospital, Chicago.

Length Growth of Bone: Composite Study of the Epiphyseal Cartilaginous Plate of the Growing Bone.

S. L. Haas, Stanford University School of Medicine, San Francisco.

The Care of Minor Hand Injuries.

Adrian E. Flatt, State University of Iowa College of Medicine, Iowa City.

Experimental Knee Arthroplasty: A Study of the Effect of Various Interposing Membranes.

Joseph L. Fleming, Christopher Glenney, Jerome Stroot, and Victor Zackay, Henry Ford Hospital, Detroit.

Internal Fixation of Bone Fragments with Flexible Wire and Pins.

F. W. Rhinelander, Cuyahoga County Hospital and City Hospital, Cleveland.

Problems of Amputee Rehabilitation.

Verne T. Inman, Biomechanics Laboratory, University of California Medical Center, San Francisco.

Local Steroid Injection Therapy for Traumatic Conditions.

Eugene G. Lipow, George Washington University, Washington, D. C.

Section on Pathology and Physiology

The Section on Pathology and Physiology is cooperating in the Special Exhibit on Fresh Tissue Pathology. The representative to the Scientific Exhibit is Samuel A. Levinson, Chicago.

The Pathology of Brucellotic Osteomyelitis.

Leo Lowbeer, Hillcrest Medical Center, Tulsa, Okla.

Certification of Medical Technologists.

Lall G. Montgomery and Ruth Drummond, Registry of Medical Technologists of the American Society of Clinical Pathologists, Muncie, Ind.

Disseminated Histoplasmosis with Addison's Disease and Meningitis.

Ruth Montgomery-Short, Charles Pokorny, C. A. Hellwig, P. H. Lehan, and M. L. Furculow, Hertzler Clinic and Hertzler Research Foundation, Halstead, Kan., and U. S. Public Health Service, Kansas City, Kan.

Pathology and Pathogenesis: Subacute and Chronic Pulmonary Histoplasmosis.

Henry C. Sweany, David F. Gorelick, Fred C. Coller, and James L. Jones, Missouri State Sanatorium, Mount Vernon, Mo.

Studies on the Action of Tolbutamide in Diabetes.

B. W. Volk and S. S. Lazarus, Isaac Albert Research Institute, Jewish Chronic Disease Hospital, Brooklyn, N. Y.

The Hemodynamic Concept of Atherosclerosis.

Meyer Texon, New York University Postgraduate Medical School and Office of the Chief Medical Examiner, City of New York.

Heparin and the Removal of Lipids from the Blood.
Hyman Engelberg, Beverly Hills, Calif.

Endocervical and Cervical Neoplasms Adjacent to Carcinoma In Situ.
P. J. Melnick, Veterans Administration Hospital, San Fernando, Calif.; Lyndon E. Lee Jr., Veterans Administration Central Office, Washington, D. C.; and Harry M. Walsh, Eloise, Mich.

Recovery of Osteoblasts and Osteoclasts in Bone Marrow Aspiration: Diagnostic Importance in Metabolic Bone Diseases.
Michael A. Rubinstein, College of Medical Evangelists and Cedars of Lebanon Hospital, Los Angeles.

Pathologic Physiology of the Pubococcygeus Muscle.
Arnold H. Kegel, University of Southern California, Los Angeles.

The Medicolegal Autopsy: Obscure and Unusual Causes of Unexepected Death.
Edward H. Johnston, Armed Forces Institute of Pathology, Washington, D. C., Paul F. Guerin and Russell S. Fisher, Office of Chief Medical Examiner, Baltimore.

Gallstones and Cholecystitis.
Bela Halpert, Veterans Administration and Baylor University College of Medicine, Houston, Texas.

Cancer in Giant Histologic Sections: Methods and Applications of Large Tissue Sections to Study of Irradiation Reactions.
H. J. C. MacMillan and Langdon Parsons, Lemuel Shattuck Hospital, Boston.

Essential Fatty Acid Deficiency.
Ralph T. Holman, University of Minnesota, Austin, Minn.

Section on Pediatrics

The representative to the Scientific Exhibit from the Section on Pediatrics is F. Thomas Mitchell, Memphis, Tenn. The Section is cooperating in the demonstrations on perinatal problems.

Early Diagnosis and Management of Phenylketonuria.
Willard R. Centerwall and Siegried A. Centerwall, College of Medical Evangelists, Los Angeles.

Diagnosis of Neonatal Jaundice by Serum Transaminase.
Simon Kove, Stanley Goldstein, Ralph E. Perry, and Felix Wroblewski, New York University College of Medicine and Sloan-Kettering Institute, Memorial Center, New York.

Laboratory Diagnosis of Aseptic Meningitides.
Gilbert Dalldorf and Henry W. Kumm, The National Foundation for Infantile Paralysis, New York.

Practical Management of Erythroblastosis in a Community Hospital.
D. William J. Bell, Frank Giunta, John T. Barrett, Leonard B. Bellin, and Ruth Appleton, Providence Lying-In Hospital, Providence, R. I.

Signal Device When Incommunicado in an Iron Lung.
Robert Cohen, Kern General Hospital, Bakersfield, Calif.

Control of Seizures and Hypertonus: Meprobamate in Tetanus, Epilepsy, and Cerebral Palsy: An Evaluation.
M. A. Perlstein, Harry Elam, and Marcos Turner, Cook County Hospital, Chicago.

Coccidioidomycosis: Incidence in School Children, Characteristics as Seen in Private Pediatric Practice.
Hugh C. Thompson, Sidney R. Kemberling, Hiram D. Cochran, and Elizabeth H. Laidlaw, Tucson Clinic, Tucson, Ariz.

The Problem of the Inarticulate Child.
James W. McLaurin and Jeannette K. Laguaite, Tulane University of Louisiana School of Medicine, New Orleans.

The Care of the Premature.
Arthur W. Fleming, Stritch School of Medicine of Loyola University, Chicago.

Hodgkin's Disease in Childhood.
Harold W. Dargeon, Charlotte Tan, and Mateo L. Origenes Jr., Children's Tumor Registry and Pediatric Service of Memorial Center, New York.

Breast Feeding in the United States: Incidence and Possible Trend.
Herman F. Meyer, Children's Memorial Hospital and Northwestern University Medical School, Chicago.

Prolonged Cough Suppression.
Edward H. Townsend Jr., and Edwin E. Hay, Rochester General Hospital, Rochester, N. Y.

Cow's Milk Allergy in Infants.
Norman W. Clein, University of Washington School of Medicine, Seattle.

Antipyretic Therapy in the Febrile Infants: An Ever-Present Problem.
A. A. Mintz, F. T. Matthes, and A. L. Megarity, Jefferson Davis Hospital and Baylor University College of Medicine, Houston, Texas.

Effects on Growth of the Newer Hormones in Children.
M. James Whitelaw, San Jose, Calif., and Sydney F. Thomas, Palo Alto, Calif.

Section on Physical Medicine

The representative to the Scientific Exhibit from the Section on Physical Medicine is Harold Dinken, Denver.

The Rehabilitation of the Cerebral Vascular Accident Patient.
Dean W. Roberts, Jayne Shover, and Louise A Bailey, National Society for Crippled Children and Adults, Inc., Chicago, and Warren E. Griffith and Esther Elder Smith, California Society for Crippled Children and Adults, Inc., San Francisco.

New Uses for Ice in Physical Medicine.
Sedgwick Mead and Margaret Knott, California Rehabilitation Center, Vallejo, Calif.

Ankle Sprains: Prevention and Treatment.
W. D. Paul and David M. Paul, University of Iowa and Veterans Administration Hospital, Iowa City.

Rehabilitation of the Hemiplegic Patient.
Miland E. Knapp and Richard R. Owen, Elizabeth Kenny Institute, Minneapolis.

The Sequency of Action of the Diaphragm and Intercostal Muscles During Respiration.
George H. Koepke, James W. Rae Jr., and David G Dickinson, University of Michigan Medical School Ann Arbor, Mich.

***Cardiac and Metabolic Demands* During Rehabilitation Procedures: Methods and Results.**
F. J. Kottke and W. G. Kubicek, University of Minnesota Medical School, Minneapolis.

Artificial Respiration.
Ralph E. DeForest and Howard A. Carter, Council on Medical Physics, *American* Medical Association, Chicago.

Ability Evaluation for Rehabilitation.
Herbert C. Moffitt Jr., and Edwin R. Schottstaedt, Morrison Center for Rehabilitation, San Francisco.

Section on Preventive Medicine

The representative to the Scientific Exhibit from the Section on Preventive Medicine is Paul A. Davis, Akron, Ohio.

Iron Poisoning in Humans: A Problem of General Practice.
Wayne G. Rohse, C. R. Kemp, Murray Franklin, J. de la Huerga, and Duane Sutfin, Chicago.

Respiratory Resuscitation.
Peter Safar, Baltimore, and James O. Elam and David G. Greene, *Buffalo*, U. S. Army Medical Service.

Influenza Antibodies in Domestic Animals.
G. O. Broun, Malcolm B. Bawell, Margaret LeGier, M. Laureen Harris, M. Dolorosa Pope, Eleanor Coller, and Rose Rita Schmidt, St. Louis University School of Medicine, St. Louis.

Malaria Eradication: A Hemisphere-Wide Campaign.
Fred L. Soper, Pan American Sanitary Organization, Regional Organization for the Americas of the World Health Organization, Washington, D. C.

Rapid Diagnosis with Fluorescent Antibody.
Morris Goldman, Max D. Moody, Robert A. Goldwasser, and Theodore R. Carski, Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Atlanta, Ga.

Prevention of Streptococcic Infection in Rheumatic Fever: Summary of a Four-Year Study.
Benedict F. Massell, Samuel L. Stancer, Joseph M. Miller, John A. Vecchiolla, Sidney Brodie, and Eliot Young, House of the Good Samaritan, Boston.

Respiratory Viral Diseases: Current Concepts of Etiology and Prevention.
Frank Cox Jr., E. A. Timm, J. M. Colville, E. L. Quinn, and I. William McLean, Henry Ford Hospital, Detroit.

A New Tool in the Management of Alcoholism: The Third Major Public Health Problem.
Vernelle Fox, Georgian Clinic, Atlanta, Ga.

Improved Cardiac Guidance for Sport: Backgrounds and Practical Suggestions.
J. W. Wilce, Ohio State University College of Medicine, Columbus.

Normal Nutrition: A Dynamic General Tool for Health.
Evelyn Piercy, San Francisco, The American Dietetic Association, Chicago.

You Can Reduce.
Philip L. White, Eugene H. Stevenson, and Mary Jane Kibler, Council on Foods and Nutrition, American Medical Association, Chicago.

Section on Radiology

The representative to the Scientific Exhibit from the Section on Radiology is Richard H. Chamberlain, Philadelphia.

Segmental Motor Paralysis: A Cause of Intestinal Obstruction and Ileostomy Disfunction.
Thomas F. Meaney and Charles R. Hughes, Cleveland Clinic, Cleveland.

Acute Leukemia: Skeletal Manifestations in Children and Adults.
Theodore F. Hilbish, Byron E. Besse Jr., Lee B. Lusted, Louis B. Thomas, and Claude E. Forkner, National Institutes of Health, Bethesda, Md.

The Role of Radiology in Periodic Health Appraisal: Faculty Examinations.
B. Jay Hill and Charles John Tupper, University of Michigan Health Service and Hospital, Ann Arbor, Mich.

Aortic Valvulography and Ascending Aortography.
William Molnar, Sidney W. Nelson, Karl P. Klassen, and Joseph A. Ryan, Ohio State University Hospital, Columbus.

Roentgen Diagnosis of Mitral Stenosis.
I. E. Kirsh and J. F. Kinney, Veterans Administration Hospital, Hines, Ill.

How DOES Cancer Grow? Wilms' Tumor.
Vincent P. Collins, Baylor University College of Medicine and Jefferson Davis Hospital, Houston, Texas.

Contrast Visualization of Lymph Nodes.
Norman Zheutlin and Edward Shanbrom, City of Hope, Duarte, Calif.

Section on Surgery, General and Abdominal

The representative to the Scientific Exhibit from the Section on Surgery, General and Abdominal is John H. Mulholland, New York.

The Clinical Application of a New Flexible Knitted Dacron Arterial Substitute.
Michael E. DeBakey, Denton A. Cooley, E. Stanley Crawford, Oscar Creech Jr., and George C. Morris Jr., Baylor University College of Medicine, Houston, Texas.

Present Status of Open Heart Surgery for Congenital and Acquired Heart Disease.
C. Walton Lillehei, Herbert E. Warden, R. A. DeWall, V. L. Gott, P. C. Hodges, R. L. Varco, and O. H. Wangensteen, University of Minnesota Medical School, Minneapolis.

Clinicopathological Observations on the Fate of Arterial Freeze-Dried Homografts.
W. A. Hawk and A. W. Humphries, Cleveland Clinic, Cleveland.

Arterial Substitutes: A Study of Homografts and Elastic Plastic Prostheses.
D. Emerick Szilagyi, John G. Whitcomb, Roger F. Smith, and Lloyd France, Henry Ford Hospital, Detroit.

Injury Dynamics: The Response of Injured Tissue to the Coenzyme Adenosine-5 Monophosphate.
B. L. Reynolds, J. B. Codington, and R. W. Buxton, University of Maryland School of Medicine, Baltimore.

Benign Diseases of the Pancreas.
C. B. Puestow and W. J. Gillesby, Veterans Administration Hospital, Hines, Ill.

Surgery for Tophaceous Gout.
William A. Larmon, J. F. Kurtz, E. A. Millar, Evan Barton, Robert M. Poske, and M. M. Montgomery, Veterans Administration Hospital, Hines, Ill.

The Quadrate Lobe in Surgery of the Biliary Passages.
Manuel E. Lichtenstein and Anthony J. Nicosia, Cook County Graduate School of Medicine and Northwestern University Medical School, Chicago.

Surgical Management of Carcinoma of the Rectum and Rectosigmoidal Region.
C. W. Mayo, J. M. Waugh, E. S. Judd Jr., B. M. Black, G. A. Hallenbeck, and O. H. Beahrs, Mayo Clinic and Mayo Foundation, Rochester, Minn.

Instantaneous Indication of Operative Blood Loss.
Harry H. LeVeen, Veterans Administration Hospital, Brooklyn, N. Y.

Medullary Nailing in Forearm Fractures.
Dana M. Street, Veterans Administration Hospital, Memphis, Tenn.

Recognition and Treatment of Alterations of Ammonia Metabolism.
John S. Najarian, Harold A. Harper, and H. J. McCorkle, University of California School of Medicine, San Francisco.

Significant Surgical Lesions of the Sphincter of Oddi.
Melvin A. Block, Brock E. Brush, and Joseph L. Ponka, Henry Ford Hospital, Detroit.

Upper Dorsal Sympathectomy: A New Surgical Approach—Special Reference to Angina Pectoris.
Louis T. Palumbo, Veterans Administration Center, Des Moines, Iowa.

Posterior Vaginal Anus.
Edward J. Donovan, J. Frederick Eagle, and Edward G. Stanley-Brown, St. Luke's Hospital, New York.

Transvaginal Pelvioscopy (Culdoscopy of Decker).
A. R. Abarbanel, Fertility Institute, Beverly Hills, Calif.

Continued Complaints Following Cholecystectomy.
C. Allen Wall and Thaddeus J. Whalen, St. Mary's Hospital, San Francisco.

Staphylococcic Hospital Infections.

Howard H. Steel, Kenneth M. Schreck, H. Taylor Caswell, Norman Learner, R. Robert Tyson, and Elsie R. Carrington, Temple University Medical Center, Philadelphia.

Section on Urology

The representative to the Scientific Exhibit from the Section on Urology is Milton M. Coplan, Miami, Fla.

Urinary Changes Following Ureterosigmoidostomy in Dogs: Pathological and Biochemical Analyses.

Alex L. Finkle, Ronald Tocantin, John C. Huffer, Sara Karg, and Donald R. Smith, University of California School of Medicine, San Francisco.

Regional Renal Hypothermia.

Paul J. Stuebner Jr., Steven Kovacs, Simon Koletsky, and Lester Persky, Western Reserve University School of Medicine and the University Hospitals, Cleveland.

Unilateral Renal Disease and Hypertension: Use of Radioactive Diodrast Renogram.

Chester C. Winter and George V. Taplin, University of California School of Medicine, Los Angeles.

Stereo-Serio Renal Angiography.

J. M. Sanchez-Perez, Mexico City.

Upper Urinary Tract Diseases of Silent or Bizarre Symptomatology.

Richard B. Dunham and Robert V. Brennan, St. Louis.

Treatment with Nitrofurantoin of Chronic and Recurrent Urinary Tract Infection in One Hundred Children.

Matthew Marshall Jr., and S. Harris Johnson III, Children's and Western Pennsylvania Hospitals, Pittsburgh.

Fluid Transfer in Transurethral *Prostatectomy:* Volumetric, Gravimetric, and Radioisotopic Determination.

Robert O. Taylor, Eugene S. Maxson, Frank H. Carter, William Bethard, and Robert J. Prentiss, San Diego County Hospital, San Diego, and Scripps Clinic, La Jolla, Calif.

A Clinical Evaluation of Intravenous Furadantin: Results in Severe Antibiotic-Resistant Infections.

Charles E. Friedgood, Unity Hospital, Brooklyn, N. Y.

Deep Dissection Orchidopexy.

Donald R. Smith and Edwin R. Roberts, University of California School of Medicine, San Francisco.

The Clinical Importance of Ureteral Duplication and Ectopy.

Ian M. Thompson and Arjan Amar, University of Michigan Medical School, Ann Arbor, Mich.

Presacral Retroperitoneal Pneumography: A Safe Technique Utilizing Carbon Dioxide.

Ralph R. Landes, Charles L. Ransom, and Robert McLelland, The Memorial Hospital, Danville, Va.

Exfoliative Cytology of the Senile Female Urethra.

Vernon H. Youngblood, Edwin M. Tomlin, and Jerome O. Williams, Concord, N. C.

Anterior Retroperitoneal Approach to the Kidney.

Richards Lyon, Berkeley, Calif., and the University of California School of Medicine, San Francisco.

Bacteriologic Methods in Diagnosis of Urinary Tract Infections: A Clinical Study of Seven Hundred Bladder Cultures.

Jasper H. Arnold, Baylor University College of Medicine, Houston, Texas.

New Concepts Concerning the Structure of the Nephron.

Hans Elias, Chicago Medical School, Chicago.

The Ileal Segment as a Valve.

Frank Hinman Jr., and Rudolf Oppenheimer, University of California School of *Medicine*, San Francisco.

Radioactive Zinc in the Male Canine Genitalia.

George R. Prout, University of Miami School of Medicine and Jackson Memorial Hospital, Miami, Fla.

Surgical Technique and Uses of Isolated Intestinal Segment in Urological Surgery.

Roderick D. Turner, University of California Medical Center, Los Angeles.

Tissue Diagnosis of Curable Prostatic Cancer.

Perry B. Hudson, *Columbia* University College of *Physicians* and Surgeons, and Francis Delafield Hospital, New York.

Studies on Sulfonamides in Prostatic *Secretion.*

Grayson Carroll, St. Louis University School of Medicine, St. Louis.

Experience with Artificial Kidneys.

George E. Schreiner and Leonard B. Berman, Georgetown University School of Medicine, Washington, D. C.

A Combined Hernioplasty and One-Stage Suprapubic Prostatectomy Via a Midline Incision.

R. Frank Jones and Burke Syphax, Freedmen's Hospital–Howard University, Washington, D. C.

Section on Miscellaneous Topics

Human Factors in Motor Vehicle Accidents.

Herman E. Hilleboe and William Haddon Jr., New York State Department of Health, Albany, N. Y.

Better Patient Care.

Joseph R. Anderson, American Hospital Association, Chicago.

Medical Illustration of Today.

Hooker Goodwin, Angela Bartenback, and Gladys McHugh, Association of Medical Illustrators, Chicago.

The Scientific Exhibit: An Aid to Medical Education.

Verlin Y. Yamamoto and Joseph K. Brown, Biological Photographic Association, New York.

An Extension Program of Postgraduate Refresher Courses.

Paul D. Foster, *College of Medical* Evangelists, Los Angeles.

Physicians and Schools.

Fred V. Hein, Donald A. Dukelow, and Wallace Ann Wesley, Bureau of Health Education, American Medical Association, Chicago.

Medical Education.

Edward L. Turner and Catherine Hayes, Council on Medical *Education and Hospitals*, American Medical Association, and Martha Johnson, Joint Commission on Accreditation of Hospitals, Chicago.

Medical Careers.

Raymond C. Pogge, Cincinnati; Edwin B. McLean, Berkeley, Calif.; and Daniel L. Shaw Jr., Philadelphia, Medical Section, American Drug Manufacturers *Association.*

National Board Examinations.

John P. Hubbard, National Board of Medical Examiners, Philadelphia.

Educational Activities.

George W. Stephenson, American College of Surgeons, Chicago.

Standard Nomenclature of Diseases and Operations.

Edward T. Thompson *and* Adaline C. Hayden, American Medical Association, Chicago.

Accident Burden on Hospitals.

Frank G. Dickinson and Leonard W. Martin, Bureau of Medical Economic Research, American Medical Association, Chicago.

Progressive Patient Care.

Howard J. Lockward, Lane Giddings, and Edward J. Thoms, Manchester Memorial Hospital, Manchester, Conn.

THE TECHNICAL EXPOSITION

107TH A.M.A. ANNUAL MEETING

JUNE 23-27, 1958 SAN FRANCISCO

San Francisco in the fourth week of June will be the hub of American medicine and the center of interest for all of the medical world.

Physicians will find a complete exposition of the most recent and important medical developments. Industries serving the field of American and international medicine will display products and services aimed at making medical practice more effective and efficient.

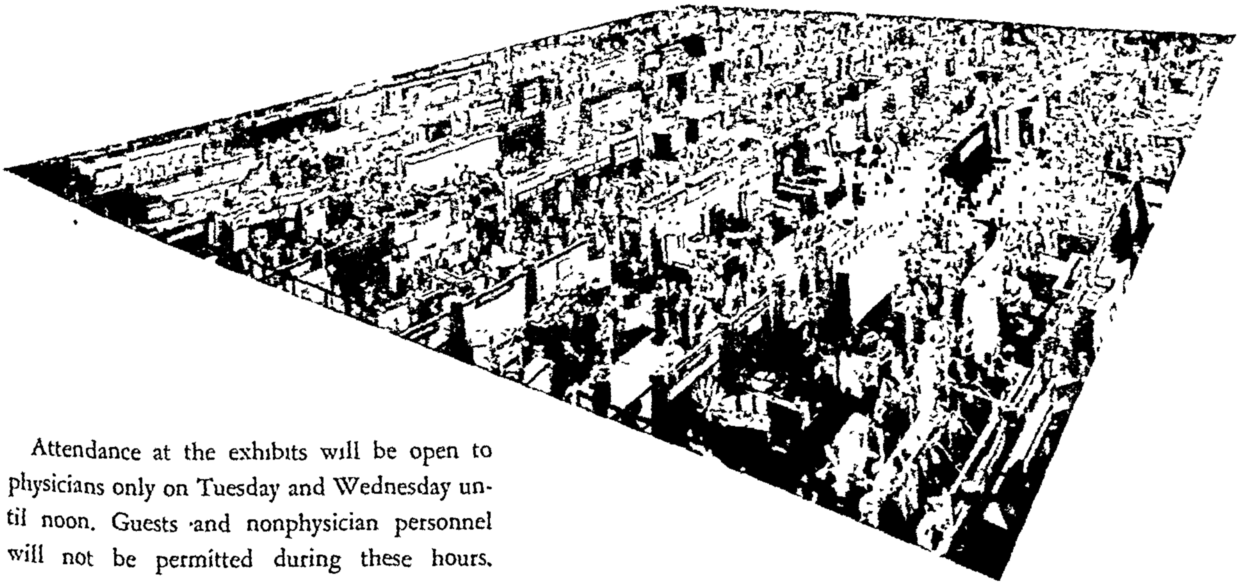
Nearly 300 companies will present technical exhibits. They will offer you the needed components for treatment, advanced forms. Qualified personnel—representing leadersstudy, office efficiency, and patient education in their most in the fields of pharmaceutical and nutritional research, equipment and instrument engineering, medical publishing and specialized services—are planning material to serve you in every way.

Visitors will see the technical exhibits in the attractive new Plaza Exhibit Hall. There will be escalators and ramps connected with the Civic Auditorium where the scientific exhibits and most section meetings will be held.

All conveniences will be located in the hall or very close to it. Restaurants, parking facilities, and public transportation all combine to provide excellent facilities for your comfort.

We hope you will plan to spend many hours touring the Technical Exposition. Representatives of the firms listed on the following pages will look forward to seeing you anytime between 8:30 a.m. and 5:30 p.m., Monday through Thursday, June 23 to 26 and 8:30 a.m. until 12:00 noon on Friday, June 27.

Robert J. Lyon
Advertising Manager and Director of
Technical Exhibits



Attendance at the exhibits will be open to physicians only on Tuesday and Wednesday until noon. Guests and nonphysician personnel will not be permitted during these hours.

TECHNICAL EXHIBITORS

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American Cyanamid Co. (Surgical Products Div.)
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Arnar-Stone Laboratories, Inc.
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Collins, Warren E., Inc.
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Continental Medical Bureau
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ico Company, Inc., The
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Westinghouse Electric Corporation (X-ray Department)
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PROCEEDINGS OF THE PHILADELPHIA MEETING

ABSTRACT OF THE PROCEEDINGS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT THE CLINICAL MEETING IN PHILADELPHIA, DEC. 3-6, 1957

(Continued from March 29, page 1622)

Introduction of Resolutions.—The Speaker called for the introduction of resolutions:

Accreditation Program for Schools of Nursing: No. 1.—Dr. Wendell C. Stover on behalf of the Indiana State Medical Association introduced a resolution urging the A. M. A. to obtain more adequate representation of the practicing physician category in the national accreditation program for schools of nursing.

The Reference Committee on Medical Education and Hospitals was in agreement with the intent of the resolution and of the opinion that there is a need for top level contact to explore methods of more intimate liaison between the medical and nursing profession. It recommended referral of the resolution to the Board of Trustees for implementation and report to the House at its next meeting.

Liaison with Rural Groups: No. 2.—Dr. Carll S. Mundy, Ohio, requested that the House of Delegates urge each state medical association to give greater support and encouragement to its state rural health committee in its work with state farm organizations and rural groups and encourage such committees to ask county medical societies to appoint a physician or a committee of physicians to form a closer liaison and work with all local farm organizations and rural groups.

The Reference Committee on Miscellaneous Business stated that the resolution reaffirms positions previously taken by the A. M. A. and recommended its approval.

Medicare: No. 4.—Dr. Kenneth B. Castleton for the Utah State Medical Association resolved that the A. M. A. request that responsible government officials take whatever steps are necessary to secure modification of Public Law 569, 84th Congress, so that dependents of military personnel would be given medical care under a prepaid medical care program such as Blue Shield.

The Reference Committee on Legislation and Public Relations stated that further study of the administrative procedures incident to the Medicare program is indicated and that it is aware of certain inadequacies and inequities in the legislative and administrative regulations under which the program is being administered. The Committee recommended that no action be taken on the resolution inasmuch as it believes that there has been insufficient experience under the program to permit of its adoption.

Vaccine Distribution: No. 5, 8, and 11.—Resolutions relating to the proper distribution of vaccine and to the Asian influenza immunization program were introduced by Dr. William Weston Jr. for the South Carolina Medical Association (No. 5), Dr. Stanley B. Weld for the Connecticut State Medical Society (No. 8) and Dr. Wendel Stover for the Indiana delagation (No. 11).

The Reference Committee on Miscellaneous Business recommended the adoption of a substitute resolution, which mentioned the existing joint committee of the A. M. A. with the American Pharmaceutical Association and the National Association of Retail Druggists, in addition to a liaison committee with the American Drug Manufacturers Association, and resolved that the Board of Trustees seek conferences through these committees with a view to establishing a code of practice regulating the future distribution of important therapeutic products, so that the best interest of all the people may be served.

Free Choice of Physician: No. 6.—Drs. Kenneth Sawyer and Edward E. H. Munro for the Colorado State Medical Society introduced a resolution calling for reaffirmation of the approval of the House of Delegates that freedom of the patient to choose his own physician from among all readily available and legally qualified doctors of medicine has contributed heavily to the unprecedented quality and world leadership of American medicine, that the basic ethical concepts in both the 1955 and 1957 editions of the Principles of Medical Ethics are identical in spite of changes in format and wording, and that, therefore, no opinion or report of the Judicial Council interpreting these basic principles which were in effect at the time of the revision has been rescinded by the adoption of the 1957 principles. The resolution also called attention to a previous and unrepealed report of the Judicial Council relating to the subject of contract practice of medicine which stated that any such contract would be determined to be unethical if "a reasonable degree of free choice of physician is denied those cared for in a community where other competent physicians are readily available."

The Reference Committee on Amendments to the Constitution and Bylaws agreed with the resolution and recommended its adoption. The Committee also reviewed the 1957 report of the Judicial Council referred to in the resolution and requested that it be repeated as a reaffirmation of the policy of the House of Delegates:

"It will be observed that in the definition of contract practice submitted to the House in 1926 no mention is made of the ethics of the practice for the reason that contract practice per se is not an ethical question, ethics being concerned with the form of the contract and the conditions under which it is made. That there are many conditions under which contract practice is not only legitimate and ethical, but in fact the only way in which competent medical service can be provided, becomes evident on analysis. For instance, where large numbers of workmen are employed remote from urban centers, as in some mining or logging camps, in such instances efficient medical service can be secured only by contracting with some competent physician to do the work. Certain industrial situations arise wherein large employers of labor are compelled by law to provide medical services for their employes under certain conditions, and this at times can be secured only by some form of contract. A community too small to offer sufficient inducements to a competent physician to locate therein may secure one by some form of contract or agreement as to compensation. It is perfectly evident, therefore, if we are to judge whether a contract is ethical or not, that we must know the form and terms of the contract as well as the particular circumstances under which it is made. As there is such a great variety of contracts, as their form and the circumstances under which they are made differ so widely, it seems impossible, or at least inadvisable, to attempt to define what constitutes an ethical contract. Each case must be judged on its own merits after all the facts pertaining thereto are known. There are certain points, however, that may be formulated which, when present, definitely determine a contract to be unfair or unethical. These may be stated as follows:

1. When the compensation received is inadequate based on the usual fees paid for the same kind of service and class of people in the same community.
2. When the compensation is so low as to make it impossible for competent service to be rendered.
3. When there is underbidding by physicians in order to secure the contract.
4. When a reasonable degree of free choice of physicians is denied those cared for in a community where other competent physicians are readily available.
5. When there is solicitation of patients directly or indirectly."

Service Membership: No. 7.—Drs. Kenneth Sawyer and Edward E. H. Munro for the Colorado State Medical Society introduced a resolution requesting that the House of Delegates reiterate its adherence to the principle that membership in the American Medical Association should originate with membership in a component county medical society and instruct the Council on Constitution and Bylaws to prepare the necessary amendments to return Service Membership to the original concept of its applicability only to the career officers of the Armed Forces of the United States. The resolution also recommended that pending implementation of these amendments, the Board of Trustees and General Officers resolve existing conflicts within the Constitution and Bylaws related to this subject matter in favor of dues-exempt active membership through component societies and constituent associations rather than in favor of direct Service Membership.

In view of the complexity of the above question, which involves changes in the Constitution and Bylaws of the Association, the Reference Committee on Amendments to the Constitution and Bylaws recommended that the resolution be referred to the Council on Constitution and Bylaws for further study. (See also discussion on resolution No. 29, page 2049).

Civil Aeronautics Administration Medical Department: No. 12.—Dr. L. O. Simenstad, Wisconsin, recommended that a completely adequate and competent Medical Department be established in the Civil Aeronautics Administration directly responsible to the CAA Administrator and provided with an adequate budget to carry out its various functions in the areas of periodic examination of flyers; the selection, training, and supervision of examiners; research in the non-competitive areas of civil aviation medicine; the examination of accidents, including the pathology of the deceased in fatal accidents; and such other functions as the Medical Director may find necessary to accomplish this mission. It was noted that a copy of the resolution and the recommendations of the House should be provided to the President of the United States and appropriate committees and members of the Congress of the United States.

The Reference Committee on Miscellaneous Business recommended approval of the resolution and recommended further that the A. M. A. support appropriate legislation, as may be necessary, to accomplish the purposes of the resolution.

American Retirement Plan: No. 13.—A resolution was introduced by Dr. L. A. Alesen, California, calling attention to the social security system and asking that the House of Delegates memorialize Congress to (1) order an immediate and thorough investgation of the entire social security system by a private, nonpolitical, unbiased agency of undoubted qualification and highest repute in the financial field; (2) give widespread publicity to the findings of this investigation; and (3) direct the agency selected to give careful and studied consideration to the development of a retirement system based on sound actuarial principles and including a combination of the insurance and annuity principle with investment in the growth of the nation's economy through equity participation such as is now available through the mutual funds.

The Reference Committee on Legislation and Public Relations indicated its sympathy with the goal sought by the resolution and noted that comparable proposals were adopted by the House in December, 1955, and in June, 1956, but that the Congress has not yet seen fit to authorize or direct such an investigation. It appeared to the Committee that no such investigation will be made unless the A. M. A. is willing and able to pay for it. In the Committee's opinion the Task Force on Social Security Hospital and Medical Benefits would be vitally interested in this subject and would directly benefit from such a study. It therefore recommended that the resolution, together with the previous actions of the House on this subject, be referred to the Board of Trustees for study as to the feasibility of such an investigation being financed by the A. M. A.

Fluoridation of Water Supplies: No. 14 and 18.—Resolution No. 14, introduced by Dr. L. A. Alesen, California, requested (1) the withdrawal of the partial and qualified approval of the fluoridation of water supplies adopted by the House in December, 1951; (2) that the editor of THE JOURNAL open its pages and the pages of other scientific publications under his control to all scientific data relating to this subject, particularly those presented by the opponents of fluoridation, for a full and comprehensive airing; and (3) that all physicians in their local medical societies be invited and encouraged to discuss and disseminate these data freely without fear of stricture of reprisal so that all practicing physicians may have access to all available facts bearing on the subject and may thereby arrive at their own conclusions.

Resolution No. 28, introduced by Dr. James P. Hammond, Vermont, condemned compulsory medication for the prevention of noncommunicable diseases.

The Reference Committee on Hygiene, Public Health, and Industrial Health recommended that these resolutions not be adopted. By way of explanation regarding item 2 of resolution No. 14, the Committee reported that the editor of THE JOURNAL, who testified at the request of the Committee, stated that material is not rejected because of its controversial nature; that THE JOURNAL is open to such material after submission to consultants for verification of its scientific merit.

Free Choice of Physician: No. 17.—Dr. Charles J. Ashworth, Rhode Island, by resolution called attention to the action of the Department of Defense, as administering agency of the Medicare program, in making the program an indemnity plan for hospitals and nursing care but full service for physicians. Any allowance will be denied by the Department of Defense if the beneficiary gives, or the attending physician accepts, any indemnity to bridge the difference between the Medicare allowance and the usual fee in the given community for the service rendered, even if such difference is available to the beneficiary through personally owned private insurance. This action by a third party denies to the patient a free choice of physician by forcing him to seek and accept medical care from those who will accept the government allowance as full payment whether or not such physicians meet the standards the beneficiary desires for his medical attentions. The resolution further requests the A. M. A. to consider the advisability of seeking a court ruling on the legislation in the interest of the beneficiary of the program that he may have free choice of physician and the highest standard of medical care in his own community.

The Reference Committee on Insurance and Medical Service stated that although it is in sympathy with the intent of the resolution it did not believe it would be practical or wise for the A. M. A. to initiate litigation as suggested. The Committee did, however, reiterate the position adopted by the House at its June, 1957, session and suggested that constituent associations, in their contract negotiations with the Department of Defense, bear the following principles in mind:

"In preliminary discussions with the Department of Defense relative to administrative regulations representatives of the American Medical Association had expressed the opinion that:

"(*a*) The Dependent Medical Care Act as enacted by Congress does not necessitate the establishment of fixed fee schedules in the implementation of the program;

"(*b*) The establishment of fixed fee schedules would result in a more expensive program than if physicians were permitted to charge their regular normal fees; and

"(*c*) The establishment of such fee schedules would ultimately disrupt the economics of medical practice.

"Administrative regulations as finally adopted did not incorporate the above suggestions of the American Medical Association and the contracts finally negotiated by all but two of the state medical societies included a negotiated fixed fee schedule.

"We are . . . recommending that the decision as to the type of contract and whether or not a fee schedule is included in future contract negotiations should be left to individual state determination, keeping in mind the above-cited suggestions originally stated by the American Medical Association. We urge the Board of Trustees of the American Medical Association to continue its effort toward accomplishing these principles. For example, the American Medical Association should request the Secretary of Defense to modify the Medicare program regulations and directives so that the program can be operated as an indemnity type of program where desired by individual states."

Vendor System of Payment: No. 18.—A resolution was introduced by Dr. Lawrence R. Dame, Massachusetts, calling attention to the fact that in Massachusetts Public Law 85-110, passed on July 17, 1957, by the Congress, has resulted in the abandonment of the vendor system of direct payments to physicians for professional services rendered to public assistance recipients and the substitution therefor of a system whereby physicians' bills are sent instead first to the patient and then to the welfare office and then paid by a combined check sent to the patient, who is responsible for the cashing of the check and disbursement of payments to the several vendors but who is prevented by law from being instructed as to what he is to do with this portion of public funds entrusted to him. The resolution requested the House to endorse the direct or vendor system of payments to physicians from public funds for professional services rendered to public assistance recipients and to instruct the Board of Trustees, by all appropriate means, to support legislation in the Congress to amend Public Law 85-110 in such manner that vendor payments shall be made from public funds by agencies of the separate states or of the United States directly to physicians for such professional services.

The Reference Committee on Insurance and Medical Service recommended that that portion of the resolution instructing the Board to support appropriate legislation be deleted and that the resolution, as amended, be submitted to the Board for referral to the appropriate councils or committees of the Association for implementation.

United Mine Workers Retirement Fund: No. 20.—The Colorado delegation introduced a resolution condemning the current attitude and method of operation of the U. M. W. A. Welfare and Retirement Fund as dangerously damaging to the quality and availability of medical and hospital care to its beneficiaries and requesting that a broad educational program be instituted at once by the A. M. A. to inform the general public, and in particular the beneficiaries of the Fund, concerning the benefits to be derived from preservation of the American right to freedom of choice of physician and hospital and observance of the other Principles adopted by the House to be used as guides in relationships between state and county medical societies and the Fund.

The Reference Committee on Insurance and Medical Service recommended approval of the resolution with amendments and suggested that the Board of Trustees request the Committee on Medical Care for Industrial Workers and other appropriate committees, councils, and departments within the Association to implement this educational program immediately. With the amendments recommended the resolution would read as follows:

"Whereas, The United Mine Workers of America Welfare and Retirement Fund has disregarded the 'Guides to Relationships Between State and County Medical Societies and the U. M. W. A. Welfare and Retirement Fund' which were adopted by this House of Delegates in New York in June, 1957; and

"Whereas, The Medical Director of that Fund has publicly disavowed these adopted principles and has publicly stated that his organization will not observe them; and

"Whereas, The Fund has, throughout the United States, arbitrarily further abrogated the right of the Fund's beneficiaries to a free choice of physicians and hospitals effective October 15, 1957; and

"Whereas, These activities of the Fund appear to be a part of a broad general plan to reduce the practice of medicine to a state of servility, against the public interest; and

"Whereas, All systems of medical care which deny patients their inalienable right to free choice of physicians and hospitals result in deterioration in the quality of medical care, therefore be it

"*Resolved,* That this House of Delegates condemns the current attitude and method of operation of the U. M. W. A. Welfare and Retirement Fund as tending to lower the quality and availability of medical and hospital care to its beneficiaries; and be it further

"*Resolved,* That a broad educational program be instituted at once by the American Medical Association to inform the general public, including the beneficiaries of the Fund, concerning the benefits to be derived from preservation of the American right to freedom of choice of physicians and hospitals as well as observance of the 'Guides to Relationships Between State and County Medical Societies and the U. M. W. A. Welfare and Retirement Fund' adopted by this House last June."

Athletic Injuries: No. 21.—Dr. Wesley W. Hall, Nevada, introduced a resolution requesting that the Council on Medical Service be authorized and directed to assume leadership and responsibility in undertaking a long-term campaign looking toward prevention, amelioration, and treatment of athletic injuries and to offer the services of the M. A. to the educational institutions of this nation and all ther properly concerned agencies to meet these needs.

The Reference Committee on Insurance and Medical ervice approved the intent of the resolution but called ttention to the fact that the Association presently has a Committee on Sports Injuries. The Committee recommended hat the Board refer the activities mentioned in the resoluion to the appropriate committee or council of the Assoiation and that the work of the Committee on Sports Injuries be given more publicity and more emphasis.

Distribution of Interns: No. 22.—On behalf of the Medical Society of the State of Pennsylvania Dr. George S. Klump submitted the following conclusions of a study and survey conducted by the Medical Society of the State of Pennsylvania to the House of Delegates for referral to the proper council or committee for information and consideration:

1. That, in the event voluntary hospital reduction of interns by 25% as recommended by the American Medical Association fails, a mandatory reduction of 25% be considered by all hospitals participating in the National Intern Matching Program.
2. That the National Intern Matching Program be approved on the basis that it is the most equitable system presently in existence. Controversial points and methods to improve operation of the program should be considered annually.
3. That more voluntary two-year internships be made available by hospitals. That the second year of such internship may be approved as the first year of a residency in general practice, internal medicine, or one of the other specialties.
4. That the Association of American Medical Colleges and Council on Medical Education and Hospitals consider two-year internships with one year served in a university hospital and one year in a nonaffiliated but university-approved hospital.
5. That early reevaluation of foreign medical schools is desirable, and such a report should receive adequate circulation. (Since this survey the Committee has learned that the Education Council for Foreign Medical Graduates has begun operation and will evaluate graduates of foreign medical schools.)

The Reference Committee on Medical Education and Hospitals recommended that section 1 be disapproved, that sections 2, 3, and 4 be adopted and referred to the Council on Medical Education and Hospitals for referral to the Committee on Preparation for General Practice, and that section 5 be deleted inasmuch as the Educational Council for Foreign Medical Graduates has begun operation and will evaluate graduates for foreign medical schools.

Old Age and Survivors' Insurance: No. 23.—Dr. George S. Klump for the Medical Society of the State of Pennsylvania introduced a resolution requesting that the A. M. A. undertake a national poll to determine whether a majority of the membership is in favor of being covered by the Old Age Disability and Survivors' Insurance program.

The Reference Committee on Legislation and Public Relations recommended that the resolution be not approved.

Conference with Third Parties: No. 24.—The Pennsylvania delegation introduced a resolution requesting that the House of Delegates instruct the appropriate committee or council to engage in conferences with third parties to develop general principles and policies which may be applied to the relationship between third parties and members of the medical profession.

The Reference Committee on Insurance and Medical Service recommended approval of the resolution.

Dissemination of Information to Delegates: No. 25.—Dr. Donald Cass, California, introduced a resolution requesting that all regularly disseminated information, e. g., special reports, handbooks, etc., be sent directly to all delegates and alternate delegates.

The Reference Committee on Reports of Board of Trustees and Secretary reported that the resolution was strongly supported by those who discussed it and recommended its adoption.

Congratulations to General Electric Company: No. 26.—Dr. William A. Hyland, Michigan, urged that the General Electric Company be congratulated on its medical television presentation on the subject of the charlatan in medicine and that an official letter be dispatched by the President and Secretary of the A. M. A. advising that company that its worthy contribution in the fight against quackery is appreciated by the House of Delegates.

The resolution was approved by the Reference Committee on Miscellaneous Business.

Group Practice: No. 27.—Dr. Raymond F. Peterson, Montana, requested affirmation by the House of Delegates that it is within the limits of ethical propriety for physicians to join together as partnerships, associations, or other lawful groups provided that the management of the affairs thereof remains in the hands of licensed physicians.

Adoption of the resolution was recommended by the Reference Committee on Insurance and Medical Service with an amendment which would indicate that the ownership and management of the affairs remain in the hands of licensed physicians.

Federal Service Physicians' Participation in Local Medical Societies: No. 29.—Dr. Eustace A. Allen, Georgia, introduced a resolution whereby (1) service membership would be reconsidered by the Council on Constitution and Bylaws for the purpose of seeking means of increasing active participation of physicians in this classification in local medical societies, (2) the Council on National Defense would assist in the accomplishment of this objective, and (3) the Surgeons General of the Army, Navy, and Public Health Service and the Medical Director of the Veterans Administration would grant special recognition or credit to physicians in these services who participate actively in local medical societies.

The Reference Committee on Medical Military Affairs recommended the inclusion of the Air Force in section 3 of the resolution and revision of the first point to indicate that membership in the A. M. A. of physicians engaged in federal medical services be reconsidered by the Council on Constitution and Bylaws and that this Council be requested to seek means of increasing active participation of physicians in this classification and in local medical societies. (See also discussion on resolution 7, page 2047).

Jenkins-Keogh Bills: No. 30.—In a resolution introduced by Dr. Warren W. Furey, Illinois, the enactment of the Jenkins-Keogh bills which would provide for equitable retirement for the self-employed was urged by special efforts not only on the part of the medical profession but also on the part of their friends.

The Reference Committee on Legislation and Public Relations commended the resolution and recommended its approval. In the opinion of the Committee the resolution emphasized the fact that members of the A. M. A. should take a more active and personal part in activities promoting the ideals and principles of the A. M. A.

MEDICAL NEWS

ARKANSAS

State Medical Meeting in Hot Springs.—The 82nd annual session of the Arkansas Medical Society will be held May 5-7 at the Arlington Hotel, Hot Springs. The president's address will be given by Dr. T. Duel Brown, Little Rock. Out-of-state speakers include Drs. Milton H. Erickson, Phoenix, Ariz.; Malcolm B. Dockerty, Jacob A. Bargen, and Dwight C. McGoon, Rochester, Minn.; Brown M. Dobyns, Cleveland; Horace V. Munger, Lincoln, Neb.; Jack A. Pritchard, Dallas, Texas; Leo H. Bartemeier, Baltimore; Hugh M. A. Smith Jr., Memphis, Tenn.; and Felix Rutledge, Houston, Texas. "Mutual Problems of Medical Practice and Public Health" will be presented by Dr. Leroy E. Burney, Surgeon General, Washington, D. C. Two films are scheduled: "William Harvey and the Circulation of the Blood," and "Red River of Life." Specialty section meetings and the annual banquet are planned for May 6. A golf tournament and a reunion for the 1938 Arkansas class have been arranged. For information write Mr. Paul C. Schaefer, 215 Kelley Bldg., Ft. Smith, Ark.

CALIFORNIA

Annual Lecture.—The Beta Phi chapter of Phi Delta Epsilon Fraternity will hold its annual lectureship on the evening of April 21. Dr. Spencer L. Israel, professor of obstetrics and gynecology of the Graduate School of Medicine, University of Pennsylvania, will speak at the University of California at Los Angeles Medical Center on "Sexuality from the Gynecologist's Viewpoint."

Personal.—Dr. Paul L. Wermer has been appointed executive medical director of the City of Hope, Duarte. He resigned as vice-president and medical director of the Warner Chilcott Division, Warner Lambert Pharmaceutical Company, to assume his new post. In 1949-1955, he was a member of the staff of the American Medical Association, serving as Secretary of the Committees on Research, on Blood, on Publications of the Council of Pharmacy, and as Assistant Secretary of the Council on Pharmacy and Chemistry.

GEORGIA

State Medical Meeting in Macon.—The 104th annual session of the Medical Association of Georgia will be held April 27-30 at the Macon Auditorium, Macon. The scientific session will open April with specialty programs beginning at 2 p. Dr. William B. Schaefer, Toccoa, will give president's address at the general business sessio April 28. Speakers include Dr. Gunnar Gunderse president-elect, A. M. A., presenting "Your AM in 1958," Drs. Joseph F. Artusio Jr., William Silverman, and James E. Thompson, New Yo City; John A. Campbell, Indianapolis; Paul Chapman, Detroit; James J. Griffitts and Donald Smith, Miami; George T. Harrell Jr., Gainesvil Fla.; James R. Maxfield Jr., Dallas, Texas; Willia F. Mengert, Chicago; Robert N. Reynolds, Geor P. Whitelaw, and Robert W. Wilkins, Boston; a Frank H. Stelling, Greenville, S. C. Scientific a commercial exhibits, a ladies' program, and speci luncheons and dinners are planned. For informati write The Medical Association of Georgia, 875 Peachtree St., N. E., Atlanta 9, Ga.

IOWA

Annual State Meeting in Des Moines.—The 19 annual meeting of the Iowa State Medical Socie will be held April 20-23 at the Veterans Memori Auditorium, Des Moines. Dr. Allan B. Philli Des Moines, president, Polk County Medical S ciety, will present an address April 21 to be fo lowed by the president's address, by Dr. Fre Sternagel. The Arthur Erskine Memorial Lectur "Head and Neck Cancer from the Standpoint of Clinical Radiotherapist," will be given by Dr. Ralp M. Caulk. A discussion on virology moderated Dr. Franklin H. Top, Iowa City, a symposium new problems in cancer, and scientific and techn cal exhibits are planned. The following will given by out-of-state speakers:

The Burn Patient—Certain Concepts Guiding Treatment, D William H. Frackelton, Milwaukee, Wis.
Application of Tissue Cultures in Diagnosis of Enterovir Infection, Dr. Tom D. Y. Chin, Kansas City, Kan.
Acute Respiratory Diseases, Dr. Joseph A. Bell, Bethesd Md.
Observations on Viral Keratoconjunctivitis, Dr. Philli Thygeson, San Francisco.
The Risk to the Fetus in Cesarean Section, Dr. Henry He seltine, Chicago.
Preoperative Evaluation of Patients for Surgery and th Selection on Anesthesia, Dr. Vincent J. Collins, Tenafl N. J.
Respiratory Allergy and Superimposed Infections, Dr. Warrick Thomas, Richmond, Va.
An American Philosophy of Financing Health Care, M Edwin J. Faulkner, Lincoln, Neb.

The annual banquet will be held April 22 at th Sabery Hotel. For information write Dr. Richard Birge, 529 36th St., Des Moines 12, Iowa.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

OUISIANA

latas Memorial Service and Award.—A memorial ervice in honor of Dr. Rudolph Matas and the eventh presentation of the Rudolph Matas award n vascular surgery will be held May 9, 8 p. m., in he Hutchinson Memorial Building of Tulane School f Medicine, New Orleans. Dr. Matas, who died Sept. 23, 1957, at age 97, served Tulane as professor and head of the department of surgery from 1894 to 1927. The Matas award will be given to Dr. John H. Gibbon Jr., professor of surgery at Jefferson Medical College, Philadelphia, for his pioneering work in extracorporeal circulation. The committee of award consists of Dr. Emile Bloch, chairman, Dr. Isidore Cohn, Dr. Lucian H. Landry, and Dr. Oscar Creech Jr.

MASSACHUSETTS

Dr. Whittenberger Named First Simmons Professor.—Dr. James L. Whittenberger, professor of physiology since 1951 and assistant dean of the faculty of public health since 1955, has been named the first James Stevens Simmons Professor of Public Health in the Harvard University School of Public Health, Boston. The formation of a new Division of Environmental Hygiene in the school with Dr. Whittenberger as director was also announced. The new division will bring together research and teaching activities of specialists in radiation hazards, air pollution, accident prevention, and industrial hygiene. The division will work in close consultation with the Laboratories of Sanitary Engineering in Cambridge, which are under the direction of Harold A. Thomas, Ph.D., professor of civil and sanitary engineering. Dr. Whittenberger has held research fellowships at the University of Chicago, the Thorndike Memorial Laboratory of the Boston City Hospital, and the New York University Medical School. He joined the Harvard School of Public Health as an associate in physiology in 1946.

MINNESOTA

Mayo Clinic Retirements in April.—The following April retirements of the staff of the Mayo Clinic, Rochester, have been announced:

Dr. Ralph K. Ghormley, former head of the section of orthopedic surgery of the Mayo Clinic, who will reside in Carmel, Calif.; Hiram E. Essex, Ph.D., co-chairman of the section of physiology of the clinic and professor of physiology, Mayo Foundation, Graduate School, University of Minnesota, who has been a member of the staff of the clinic since 1928; and Dr. James F. Weir, who came to Rochester in 1920, as a fellow in medicine of the Mayo Foundation, and in 1952 was appointed chairman of two sections of internal medicine particularly concerned with gastroenterologic problems and in 1955 of the four sections of this specialty.

NEBRASKA

State Medical Meeting in Lincoln.—The Nebraska State Medical Association will hold its annual meeting April 28-May 1 at the Cornhusker Hotel, Lincoln. The presidential address will be given by Dr. R. Russell Best the morning of April 29, and Mr. C. Joseph Stetler, director, Law Department, A. M. A., will discuss "Malpractice" that afternoon. A clinical pathological conference moderated by Dr. Frank H. Tanner, Lincoln, will include the following participants: Drs. Alexander Marble, and Seymour J. Gray, Boston; Michael L. Mason, Chicago; John R. Paine, Buffalo; and James F. Kelley Sr., and Horace K. Giffen, Omaha. Guest speakers include Drs. William C. Keettel, Iowa City; Albert V. Stoesser, Minneapolis; and Major Gen. Paul I. Robinson, M.C., U. S. Army, Washington, D. C. Kenneth McFarland, Ph.D., Topeka, Kan., will be the speaker at the banquet April 30. A golf tournament, trap shoot, sportsman's dinner, and a program of ladies' activities are planned. For information write the Nebraska State Medical Association, 1315 Sharp Building, Lincoln 8, Neb.

NEW YORK

Reject Ellis Island as Narcotic Hospital Site.—A group representing agencies at the federal, state, and city levels visited Ellis Island on Feb. 11 to determine the suitability of the property for a narcotics hospital. In a report of these considerations, Surgeon General Leroy E. Burney and State Health Commissioner Herman E. Hilleboe state that more money would be required to improve and renovate the island buildings than would be required for the construction of a new modern plant. They summarize that the facilities at Ellis Island should not be considered for the care and treatment of narcotic addicts, since "the plant has many disadvantages that would preclude its use for any sort of institutional care because of its geographical location and the layout and condition of the buildings, as well as the limited amount of available free space on the island."

New York City

Dr. Reid Named First Kress Professor.—Dr. Loudon C. Reid has been appointed the first Rush H. Kress professor of research surgery at New York University Post-Graduate Medical School through a fund created by the Samuel H. Kress Foundation. Mr. Kress is president of the foundation and a brother of its late founder. In addition to the creation of the research chair of surgery and a dollar-for-dollar matching pledge of 5 million dollars in March, 1957, toward the complete reconstruction of University Hospital (the former New York Post-Graduate Hospital), the foundation, during the past nine years, has given over 8 million dollars to the Post-Graduate Medical School at New York University. Dr. Reid joined the faculty of NYU College of

Medicine in 1947 as an associate professor in the department of physiology. In 1950 he transferred to the department of surgery in the Post-Graduate Medical School as professor of experimental research surgery.

Program to Train Research Psychiatrists.—The Downstate Medical Center of the State University of New York has announced a program to train researchers in psychiatry leading to the degree of doctor of medical science. It is open to M.D.'s who have completed three years of residency training in psychiatry. Under a grant from the Commonwealth Fund, graduate students enrolled in the program will receive stipends of $7,500 during the first year and $8,000 the second year. Tuition will be $200 a year. The Program of Research Training in Psychiatry is part of the Graduate Educational Program of the Downstate Medical Center which was inaugurated in 1956. Programs leading to the M.S. and Ph.D. degrees in the basic medical sciences of anatomy, biochemistry, microbiology and immunology, pharmacology, and physiology are now offered. For information write the State University of New York, the Downstate Medical Center, 450 Clarkson Ave., Brooklyn.

Hospital News.—The New York Hospital will begin construction in July on a two-story building to connect two existing wings. It will house the outpatient department, the emergency department, and part of the radiology facilities. The building will be named the Dr. Connie Guion Building in honor of a physician who has served on the staff of the New York Hospital for 40 years, and who has served for 9 years as chairman of the outpatient department committee of the medical board. A campaign to raise eight million dollars for construction and endowment of the new building was launched April 1. Nearly half of this amount has already been pledged. This voluntary hospital which does not operate for profit, was established by Royal Charter granted on June 13, 1771, in the reign of King George III of England. It was the first hospital to be erected in New York City. The new unit will be the first major structural addition to the main hospital building since the center was built in 1932.

Inaugural of Dr. Moore as University President.—Dr. Robert A. Moore will be formally inaugurated as the first president of the State University of New York Downstate Medical Center May 2, 2:30 p. m., behind the center's Basic Sciences Building, in Brooklyn. Presiding at the exercises will be Mr. Frank C. Moore, chairman of the State University Board of Trustees. Dr. Peter M. Murray, chairman of the trustees' Committee on Medical Education, will install the president. Others on the program will be: Dr. Dominick F. Maurillo, representing the Board of Regents; the Very Reverend John A. Flynn; president of St. Johns University; Dr. John J. Flynn, president, Kings County Medical Society, and Dr. Louis M. Hellman, chairman of the Medical Center's department of obstetrics and gynecology. Dr. Moore assumed the post of president of the Downstate Medical Center and dean of its College of Medicine Oct. 1, 1957. He was previously vice-chancellor, health professions, University of Pittsburgh.

Medicolegal Institute.—The American Board of Legal Medicine, Inc., will present a series of medicolegal sessions at Manhattan General Hospital as follows:

April 19:
Trauma and Heart Disease, Dr. George Schwartz, New York City.
Pathology in the Atomic Era and The Law, Dr. George A Friedman, New York City.
April 26:
Trauma in Urology, Dr. Benjamin M. Shure, Brooklyn.
Medicolegal Outlines of Consent, Dr. Alfred Koerner, New York City.
May 3:
Trauma in Relation to Nervous and Mental Disease, Dr. James P. Casey, New York City.
Malpractice Highlights, Dr. Alfred Koerner, New York City.

The first session was held April 12 with Drs. Louis J. Gelber and Maxwell M. Booxbaum presenting "Trauma and Arthritis," and "The Present Problem of Malpractice," respectively. For information write The American Board of Legal Medicine, 1501 Broadway, New York 36.

NORTH DAKOTA

New Rehabilitation Unit.—Open house was held recently at the new Medical Center Rehabilitation Unit at the University of North Dakota, Grand Forks, when visitors had an opportunity to inspect facilities for physical and occupational and speech therapy, hearing testing, and prevocational testing The center is in the McCannel Building, which was named for Dr. Archie D. McCannel, of Minot, who was a member of the State Board of Higher Education for several years. It is open to all physically disabled persons in North Dakota and adjoining states. Dr. Theodore H. Harwood, dean of the School of Medicine, is secretary.

OHIO

Medical History Meeting in *Cincinnati*.—The Ohio Academy of the History of Medicine will meet April 26 at the Taft Museum, Cincinnati. Ten papers are scheduled, including "The Transylvania Medical School," presented by Dr. Carey C. Barrett, Lexington, Ky. Exhibits, including a special exhibit by the David A. Tucker Jr. Library of the History of Medicine, are planned. Dr. Leon Goldman will preside at the meeting, and discussions will follow the presentations. For information write the University of Cincinnati College of Medicine, Department of Dermatology and Syphilology, Cincinnati General Hospital, Cincinnati 29.

PENNSYLVANIA

General Practice Meeting in Pittsburgh.—The 10th annual scientific assembly of the Pennsylvania Academy of General Practice will be held May 21-24 at the Penn-Sheraton Hotel, Pittsburgh. Presentations will be made under the following specialty headings: obstetrics, surgery, pediatrics, medical economics, and endocrinology. Out-of-state speakers include Drs. M. Edward Davis, Chicago; Milton G. Potter, Buffalo, N. Y.; H. William Clatworthy Jr., Columbus, Ohio; and Edward H. Rynearson, Rochester, Minn. Mr. Theodore Wiprud, executive director, Medical Society of the District of Columbia, will present "The Third Party—Friend or Foe" May 24. Question-and-answer periods will follow the formal presentations. For information write Dr. Edward J. Kowalewski, Pennsylvania Academy of General Practice, 4450 State Road, Drexel Hill, Pa.

Philadelphia

Research Fellowships.—The Institute of Neurological Sciences, School of Medicine, University of Pennsylvania, is continuing its training and research fellowship program which offers a broad and integrated approach to the study of the nervous system. In addition, the institute is now supporting qualified investigators who wish to pursue an academic career in psychiatry. Fellowships are available to Ph.D. candidates and to postgraduate investigators (Ph.D., M.D.), the stipends to be arranged according to need and qualifications. For information write Dr. Louis B. Flexner, Institute of Neurological Sciences, School of Medicine, University of Pennsylvania, Philadelphia 4.

RHODE ISLAND

Vital Statistics.—The Rhode Island Department of Health has published an annual report on vital statistics (covering the calendar year of 1956). Of the 10 leading causes of death, the first three, diseases of the heart (42.0%), malignant neoplasms (17.7%), and vascular lesions affecting the central nervous system (11.0%), comprise over 70% of all deaths in the state. Accidents, although a significantly smaller percentage (4%), were the fourth leading cause of death. Motor vehicles took second place to accidental falls. The death rate from tuberculosis dropped from 4.4 per 100,000 population in 1939 to 0.4 per 100,000 in 1956. Deaths under one year declined from 66.5 per 1,000 live births in 1927 to 23.8 in 1956. The population of Rhode Island has increased from 677,000 to 828,000 in the 30 years since 1927. However, the City of Providence lost over 25,000 residents since 1950.

TEXAS

State Medical Meeting in Houston.—The 91st annual session of the Texas Medical Association will be held April 19-22 at the Shamrock Hilton Hotel, Houston. A symposium on medical emergencies and problems associated with peacetime uses of atomic energy will be held April 19. Dr. Charles D. Kerr, president of the association, will present an address April 21. Speakers and topics at the general meetings are:

The Meigs Syndrome, Dr. Joe V. Meigs, Boston.
The Problem of Radiation Control, Dr. Russell H. Morgan, Baltimore.
Newer Theories About Etiology of Peptic Ulcer, Dr. John T. Howard, Baltimore.
Major Surgery in Aged Patients, Dr. James D. Rives, New Orleans.
Problems of Gastric Ulcer and Gastric Cancer, Dr. Isidor S. Ravdin, Philadelphia.
Management of Menopause, Dr. Robert N. Creadick, Durham, N. C.
Psychologic Reactions to Physical Illness in Children, Dr. Barbara M. Korsch, New York City.
Problems in Urological Differential Diagnosis, Dr. Elmer Hess, Erie, Pa.

Guest speakers include Dr. David B. Allman, president, A. M. A., who will present "No Time for Tranquilizers" at a general meeting luncheon. Entertainment includes a golf tournament, skeet shooting, alumni banquets, and the president's party, April 22. The 27th annual National Venereal Disease Postgraduate Conference will be held at the M.D. Anderson Hospital and Tumor Institute, Houston, April 23-25. For information write the Texas Medical Association, 1801 N. Lamar Blvd., Austin, Texas.

VIRGINIA

Annual Lecture.—The Alpha Mu Chapter of the Phi Delta Epsilon Fraternity at the Medical College of Virginia, will hold its ninth annual lectureship April 28, 2 p. m., in the hospital auditorium. The guest speaker is Dr. Paul M. Zoll, associate clinical professor of medicine, Harvard Medical School, Boston, and the title of his talk is "The Treatment of Cardiac Arrest."

Society News.—The Virginia Society of Ophthalmology and Otolaryngology has installed the following officers: Drs. Emanuel U. Wallerstein, Richmond, president; Calvin T. Burton, Roanoke, president-elect; Thomas M. Winn, Covington, vice-president; and Maynard P. Smith, 1835 Monument Ave., Richmond, secretary-treasurer. The next scheduled meeting of the society will be held in Richmond on May 2-3.

General Practice Meeting at Virginia Beach.—The eighth annual scientific assembly of the Virginia Academy of General Practice will be held May 8-11 at the Cavalier, Virginia Beach. A panel discussion, "Current Problems in the Diagnosis and Management of Diabetes Mellitus," is scheduled for May 9. The program includes the following papers by out-of-state speakers:

Insulins in the Treatment of Diabetes, Dr. Franklin B. Peck Sr., Indianapolis.
The Physician as a Marriage Counsellor, Dr. Abraham Stone, New York City.
Rheumatic Fever, Then and Now—A 30-year Perspective, Dr. Edward F. Bland, Boston.
Methods in the Treatment of the Anxiety Tension Patterns, Dr. Henry H. Dixon, Portland, Ore.
Relationship Between Clinical Gynecology and Gynecological Pathology, Dr. James D. Woodruff, Baltimore.
Emotional Problems of Children, Dr. Joseph F. Hughes, Philadelphia.

A heart symposium will be held May 10. A golf tournament is planned for May 8, and the dinner dance will be held May 10. For information write the Virginia Academy of General Practice, 1105 W. Franklin St., Richmond 20, Va.

WISCONSIN

University News.—The Alpha Lamba Chapter of the Phi Delta Epsilon Fraternity at Marquette University School of Medicine will hold its annual Eben J. Carey Memorial Lecture April 25. Dr. Harry H. Gordon, pediatrician-in-chief at Sinai Hospital of Baltimore will speak on "Tocopherol Deficiency in Steatorrhea."

GENERAL

Health Education Conference.—The 1958 Eastern States Health Education Conference of the New York Academy of Medicine is scheduled for April 24-25 and will include four sessions and evening dinner meeting, April 24. The theme of this year's conference will be "Toward a Philosophy of Public Health" developed under three major headings: Public Health in Transition, Public Health in the Context of Communication and Interpretation, and Manifold Motivation. At the dinner meeting M. Robert Gomberg, Ph.D., will speak on "Stabilizing the Family for Health and Social Effectiveness." A symposium on motivation will be conducted April 25 by John W. R. Thompson, Ph.D. Conference fee is $15. For information write the New York Academy of Medicine, 2 E. 103rd St., New York 29.

Meeting on Cleft Palate Rehabilitation.—The 16th annual meeting of the American Association for Cleft Palate Rehabilitation will be held April 24-26 at the St. Francis Hotel, San Francisco. Twenty papers and a film, "Bilateral Cleft Lip Repair," presented by Drs. Kerwin M. Marcks, Allan E. Trevaskis, and John E. Kicos, Allentown, Pa., are scheduled. A forum on "Cleft Palate Programs in the West," with Dr. Herold S. Lillywhite, Portland, Ore., as chairman, will include the following participants: Dr. Arthur H. Parmelee Jr., Los Angeles; Jacqueline Keaster, M.S., Los Angeles; Charles S. Lipp, D.D.S., San Francisco; Dr. Mar W. McGregor, San Francisco; Dr. Lillywhite; and Dr. Herbert E. Coe, Seattle. Registration fee for nonmembers is $3. For information write the American Association for Cleft Palate Rehabilitation, Office of Secretary-Treasurer, Department of Otolaryngology, University Hospitals, Iowa City, Iowa.

Award Science Fellowships.—The National Science Foundation has announced the award of 54 Science Faculty Fellowships for the academic year 1958-1959. These fellowships are offered "as a means of improving the teaching of science, mathematics and engineering in American colleges and universities." The primary purpose of the awards is to provide an opportunity for college and university science teachers to enhance their effectiveness as teachers. The foundation also announced award of 27 Senior Postdoctoral Fellowships in the science for the academic year 1958-1959, selected from 15 applicants. Ten awards were made in the lif sciences and fifteen in the physical sciences, including a number in interdisciplinary fields. Applications were reviewed by a panel of scientists unde arrangements made by the National Research Council. Science Faculty and Senior Postdoctora Fellowships carry stipends adjusted to approximat the regular salaries of award recipients. These stipends may be applied toward study or research in an accredited nonprofit institution of highe learning in the United States or abroad. All award were approved by the National Science Board upon the recommendation of Alan T. Waterman, Ph.D. director of the foundation.

Research on Connective Tissue Diseases.—The Helen Hay Whitney Foundation has announced the availability of research fellowships to provide "adequate early financial support for young postdoctora men and women interested in careers in clinica and nonclinical investigation dealing with connective tissue and its diseases." The foundation was established in 1947 to stimulate and support research in rheumatic fever and rheumatic heart disease and has recently expanded its activities to include the study of connective tissue and its diseases Any qualified person, wherever located, up to the age of 35, holding the M.D., Ph.D., or their equivalent is eligible. The applicant must have a commitment for adequate facilities and research expenses during the tenure of the fellowship from an institution or laboratory acceptable to the Scientific Advisory Committee. The fellowship is an annual award to continue for a period of three years contingent on performance satisfactory to the advisory committee. Stipends will be individualized to meet the needs of the fellow. A contribution of $1,000 will be made to the laboratory of the fellow selected. For applications and information write the Helen Hay Whitney Foundation, 525 E. 68th St., Room F-231, New York 21. Applications should be mailed prior to Aug. 15 for fellowships commencing July 1 of the following year.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories and possessions in the weeks ended as indicated:

Area	March 22, 1958		March 23, 1957
	Paralytic Type	Total Cases Reported	Total
New England States			
Maine	..	..	..
New Hampshire	..	..	..
Vermont	..	..	..
Massachusetts	..	..	..
Rhode Island	..	..	..
Connecticut	..	1	..
Middle Atlantic States			
New York	..	..	..
New Jersey	..	..	..
Pennsylvania	..	..	..
East North Central States			
Ohio	..	..	..
Indiana	..	..	2
Illinois	..	1	..
Michigan	1	2	..
Wisconsin	..	..	1
West North Central States			
Minnesota	..	..	..
Iowa	..	..	..
Missouri	1	1	2
North Dakota	..	..	..
South Dakota	..	..	..
Nebraska	1	1	2
Kansas	..	..	1
South Atlantic States			
Delaware	..	..	1
Maryland	..	..	..
District of Columbia	..	..	..
Virginia	..	..	..
West Virginia	..	..	..
North Carolina	..	..	..
South Carolina	..	..	2
Georgia	..	..	..
Florida	..	1	..
East South Central States			
Kentucky	..	..	..
Tennessee	..	..	..
Alabama	..	..	1
Mississippi	..	..	1
West South Central States			
Arkansas	..	..	..
Louisiana	..	..	2
Oklahoma	..	..	1
Texas	1	2	6
Mountain States			
Montana	..	..	..
Idaho	..	..	..
Wyoming	..	..	..
Colorado	..	..	..
New Mexico	1	1	..
Arizona	..	..	3
Utah	..	..	1
Nevada	..	..	..
Pacific States			
Washington	..	..	..
Oregon	..	..	2
California	1	4	6
Territories and Possessions			
Alaska	..	..	..
Hawaii	..	..	..
Puerto Rico	1	1	..
Total	7	15	34

Fellowships in Psychiatry.—The American Psychiatric Association has announced a $100,000 grant from the Smith Kline & French Foundation to continue the foundation's fellowships in psychiatry through 1960. These fellowships were established in 1955 with a three-year, $90,000 grant from the foundation. The program is administered by a committee appointed by the association. In announcing the new grant, the association said that more than 150 physicians and medical students already have benefitted from foundation fellowship awards. Seven main types of foundation fellowships are available: (A)—Support for advanced training of full-time staff psychiatrists; (B)—Awards to hospitals for visiting lectureships and for teaching fellowships; (C)—Support to medical schools, teaching centers, etc., for extension training programs; (D)—Student fellowships to encourage medical students to broaden their experience in psychiatry; (E)—Medical fellowships to encourage broadened skill in the handling of psychiatric problems by physicians other than psychiatrists; (F)—Foreign scholar lectureships to bring outstanding men to the United States; (G)—Residency training fellowships under unusual circumstances. Applications for consideration in May and October must be received by the Fellowship Committee by April 1 and Sept. 15. Information and application forms may be obtained from the Committee, Box 7929, Philadelphia.

Pathologists Meetings in Cleveland.—Consecutive meetings of the International Academy of Pathology (April 21-23) and the American Association of Pathologists and Bacteriologists (April 24-26) will be held at the Hotel Statler, Cleveland. At the 47th annual meeting of the academy, Prof. Erwin Uehlinger, University of Zurich, Switzerland, will present the Honorary Lecture on "Interstitial Nephritis." A symposium on the electron microscopic appearance of the kidney will be held April 23. Prof. J. David Robertson, University College, London, England, will present "Certain Altered Contact Relationships of Cell Membranes During Growth Compared with Similar Alterations Induced Experimentally."

At the 55th annual meeting of the association, Dr. Javier Arias-Stella, of the Faculty of Medicine, Lima, Peru, will read a paper and the following topics by Canadian speakers will be presented:

Skeletal Lesions Caused by Beta Mercaptoethylamine in Rats, Drs. P. Ramamurti and Harold E. Taylor, Vancouver, B. C.

Effect of Nutritional Factors on Experimental Virus Hepatitis in Mice, Boris Ruebner, Ch.B., and Dr. J. Bramhall, Halifax, N. S.

Application of THF to Autopsy and Surgical Pathology Tissue, Drs. Maria D. Haust, Robert H. More, and George F. Kipkie, Kingston, Ontario.

Malignant Messenchymoma (of the Hemangioblastomyxomatous Variety) in a Five-Year-Old Boy, Drs. Kipkie and Haust.

A symposium on "Natural and Acquired Factors in Resistance to Disease" will be held April 25.

a salute to
medical school progress

MEDICAL EDUCATION
WEEK ···· April 20-26

Exhibits, movies, and annual banquets are planned for both meetings. The registration fee is $3. For information write Dr. Russell L. Holman, Secretary, American Association of Pathologists and Bacteriologists, Louisiana State University School of Medicine, New Orleans 12, La.

FOREIGN

Congress of Biological Standardization in Brussels.—The Fourth International Congress of Biological Standardization will be held in Brussels July 24-30. The four principal items on the agenda are: Pyrogens, Staphylococcic Anatoxins and Vaccines, Control of Biological Substances During Production, and Safety Tests in Living Vaccines. The following problems will also be treated: Bacteriophage Treatment, Measles, Data Acquired from the Last Influenza Pandemic, Control of Antiaphthous Vaccines on Tissue Cultures, and Booster Injections. Address inquiries to Drs. Recht and LaFontaine, rue Juliette Wytsman, 14, Ixelles–Bruxelles, Belgium.

CORRECTION

Glaucoma in Medical Practice.—In the article by Cholst, Goodstein, Berens, and Cinotti appearing in the March 15, 1958, issue of The Journal, in the legend to figure 4, on page 1278, *A* refers to the light reflexes on the iris and *B* to the light reflexes on the cornea, rather than the reverse, as was stated.

EXAMINATIONS AND LICENSURE

MEDICAL SPECIALTY BOARDS

American Board of Anesthesiology: *Written.* Various locations, July 17, 1959. Final date for filing application is January 17, 1959. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford.

American Board of Dermatology: *Written. Several Cities,* June 30. *Oral.* Detroit, Oct. 17-19. Final date for filing all applications is April 1. Sec., Dr. Beatrice Maher Kesten, One Haven Ave., New York 32.

American Board of Internal Medicine: *Written.* Oct. 20, 1958. *Oral.* Philadelphia, April 23-26; San Francisco, June 18-21; Chicago, Oct. 13-16. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

American Board of Neurological Surgery: Examination given twice annually, in the spring and fall. In order to be eligible a candidate must have his application filed at least six months before the examination time. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, St. Louis 10.

American Board of Obstetrics and Gynecology: *Part II.* Chicago, May 7-17. Final date for filing application was September 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Written,* qualifying test (Part I), January 1959. Final date for filing application is July 1, 1958. *Oral Examinations 1958* (Part II): San Francisco, June 17-21; Chicago, Oct. 17-22. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland, Maine.

American Board of Orthopaedic Surgery: *Part II.* Chicago, Jan. 21-23, 1959. Sec., Dr. Sam W. Banks, 116 South Michigan Avenue, Chicago 3.

American Board of Otolaryngology: *Oral.* Chicago, Oct. 6-9. Final date for filing application is March. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

American Board of Pathology: San Francisco, June 30-July 2. Final date for filing application is May 1. Sec., Dr. Edward B. Smith, Indiana University Medical Center, 1042-1232 W. Michigan St., Indianapolis 7.

American Board of Pediatrics: *Oral.* Atlantic City, May 3-5; Cincinnati, June 13-15; Chicago, Oct. 24-26 and New York, Dec. 5-7. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

American Board of Physical Medicine and Rehabilitation: *Oral and Written.* Peoria, Ill., June 20-21. Final date for filing application was Feb. 1. Sec., Dr. Earl C. Elkins, 200 First St., S. W., Rochester, Minn.

American Board of Plastic Surgery: *Oral and Written.* Galveston, Texas, May 18-20. Corresponding Secretary, Miss Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8

American Board of Preventive Medicine: *Occupational Medicine,* April 18-20. Final date for filing application was Jan. 30. *Public Health* on a Regional Basis, April. Final date for filing application is Jan. 30. Sec., Dr. Tom F. Whayne, 3438 Walnut St., Philadelphia 4.

American Board of Proctology: *Oral and Written, Parts I and II.* September 1958. Final date for filing application is March 15. Sec., Dr. Stuart T. Ross, 520 Franklin Ave., Garden City, N. Y.

American Board of Psychiatry and Neurology: New York City, Dec. 15-16. Training credit for full time psychiatric and/or neurologic assignment in unapproved military programs or services between the dates of Jan. 1, 1950 and Jan. 1, 1954 will be terminated on Jan. 1, 1959. Sec., Dr. David A. Boyd, 102-110 Second Ave. S. W., Rochester, Minn.

American Board of Radiology: *Special Examination in Nuclear Medicine for Diplomates in Radiology or Therapeutic Radiology,* Chicago, May 17. Deadline for filing application was Feb. 1. *Regular Examination in Radiology,* Chicago, May 19-23. Final date for filing application was Jan. 1. *Regular Examination in Radiology.* Washington, D. C., Dec. 8-12. Final date for filing application is July 1. Sec., Dr. H. Dabney Kerr, Kahler Hotel Bldg., Rochester, Minn.

American Board of Surgery: *Oral (Part II).* Chicago, May 12-13; Los Angeles, June 16-17; *Portland,* June 20-21. Written examinations (Part I) will be held at various centers in the United States, Canada, Hawaii, Puerto Rico. and certain military centers abroad on *December 3.* The date of the Fall examination in *Part I* has been changed from the last Wednesday of October as announced in its current Booklet of Information to December 3, 1958. Thereafter, examinations in Part I will be held once annually, on the first Wednesday of December. The closing date for filing applications will be August 1. *Part II.* Baltimore, March 10-11. Sec., Dr. John B. Flick, 225 So. 15th St., Philadelphia 2.

Board of Thoracic Surgery: *Oral.* Boston, May 12-13 Final date for filing application was December 1. The fall written examination will be given in September 1958 and closing date for registration is July 1. Registration for the fall oral examination closes July 1.

GOVERNMENT SERVICES

NAVY

International Symposium on Freezing and Drying.—Commander George W. Hyatt, M.C., director, tissue bank department, Naval Medical School, Bethesda, Md., will attend the Second International Symposium on Freezing and Drying at Beveridge Hall, Senate House, London, England, where he will present a paper on storage of human tissues for surgical application. Also presenting papers in the section of the symposium devoted to that subject will be Prof. Louis R. Ray of the École Normale Superieure, Paris, France, and Dr. A. S. Parkes, head, department of biology, National Institute of Medical Research, Great Britain.

Personal.—Capt. John F. Smith, M.C., U. S. Naval Reserve, was placed on the temporary disability retired list of Naval Officers on March 1, 1958. Prior to his retirement he was serving at the U. S. Naval Air Station, Oakland, Calif.

VETERANS ADMINISTRATION

Decrease in Number of Tuberculosis Patients.—A 16% decrease in the average daily number of tuberculosis patients in VA hospitals since 1954 was reported March 11. The daily average dropped from 15,221 in fiscal year 1954 to 12,715 in fiscal year 1957, although the number of admissions and discharges of patients with tuberculosis over the same period of time remained the same.

Dr. Roy A. Wolford, VA deputy chief medical director in Washington, D. C., said the decrease resulted from a reduction of length of stay due to drug treatment pioneered by VA research, plus a VA program that permits tuberculosis patients to return home while under drug therapy. While the average period of tuberculosis drug treatment is 18 to 24 months, many patients can leave the hospitals after 8 or 9 months, provided they continue to receive adequate medical supervision.

To prevent keeping of patients in the hospital when they require only occasional observation or treatment, a program called "completion of bed-occupancy care" has been developed by the VA over the years. Under this program, certain patients may leave the hospital and return for completion of treatment, particularly in areas where community resources for follow-up care are inadequate. Dr. Wolford said this form of completion of hospital treatment is also used for psychiatric patients on trial visit to their communities, for cancer patients, and for others with long-term illnesses.

Personal.—Dr. Harold A. Stokes has been appointed manager of the VA Hospital at Fort Meade, S. D., succeeding Dr. Frederick J. Bradshaw, who was transferred to the VA Hospital at Tomah, Wis.

PUBLIC HEALTH SERVICE

Millions Awarded for Psychiatric Training.—The surgeon general of the Public Health Service has announced that $13,693,845 in grants has been awarded since July 1, 1957, to medical schools and other institutions for training in psychiatry, psychology, psychiatric and school social work, and psychiatric nursing. Under this program the National Institute of Mental Health provides support to help meet critical needs for professional personnel. Teaching grants are used to establish, expand, or improve training in mental health at graduate and undergraduate levels. Institutions supported under the graduate training programs include medical schools, hospitals, clinics, psychology departments of universities, collegiate schools of nursing, schools of social work, and schools of public health. In addition, these centers can apply for traineeships and stipends for promising individuals. Ten years ago only 19 medical schools in the United States provided general undergraduate training in psychiatry, whereas 82 schools of medicine and 6 schools of osteopathy now teach psychiatry, the Public Health Service said.

New Assistant Surgeon General.—The surgeon general has announced the appointment of Dr. Arnold B. Kurlander to the newly created post of assistant surgeon general for operations. Dr. Kurlander will assist in coordinating the programs of the three major operating bureaus of the PHS and perform special assignments for the surgeon general. Dr. Kurlander, who for the past 11 months has been serving as an assistant to the surgeon general, has been a member of the commissioned corps since 1939. Prior to his assignment in the office of the surgeon general, he was chief of the chronic disease program.

FOOD AND DRUG ADMINISTRATION

New Appointments.—Dr. William H. Kessenich has been appointed deputy medical director of the Food and Drug Administration Bureau of Medicine, Commissioner George P. Larrick has announced. Dr. Kessenich, a native of Washington, D. C., joined the Food and Drug Administration in 1955.

Mr. Larrick also announced the appointment of Dr. Eugene R. Jolly as assistant director of the new drug branch of the Bureau of Medicine. Dr. Jolly, a native of Oconto, Wis., received a Ph.D. degree in pharmacology from the University of Wisconsin. He taught pharmacology at the University of Michigan School of Medicine and received his M.D. degree from that institution in June, 1957.

DEATHS

Acton, John Wesley, Glasgow, Ky.; Kentucky School of Medicine, Louisville, 1897; an associate member of the American Medical Association; on the staff of the T. J. Samson Community Hospital, where he died Jan. 29, aged 87, of a cerebral accident and arteriosclerosis.

Adams, Ralston Heberling ⊕ Washington, D. C.; George Washington University School of Medicine, Washington, 1943; associated with the Food and Drug Administration; veteran of World War II; served as director of the outpatient clinic for the U. S. Public Health Service; died Feb. 17, aged 38.

Alekna, Antanas ⊕ Chicago; Vytauto Didžiojo Universiteto Medicinos Fakulteto, Kaunas, Lithuania, 1931; died Dec. 28, aged 54, of myocardial infarction.

Allder, Walter Harry, Oklahoma City, Okla.; Kentucky School of Medicine, Louisville, 1892; died in St. Anthony Hospital Jan. 27, aged 88, of pulmonary embolism.

Alldredge, Hugh Henry, Englewood, Colo.; born in Brooksville, Ala., March 25, 1877; University of the South Medical Department, Sewanee, Tenn., 1901; past-president of the Arapahoe County Medical Society; for eight years county health officer; served for many years as president of the board of directors of the First Federal Savings and Loan Association, and vice-president of the First National Bank, where he was lifetime honorary vice-president; veteran of World War I; past-president of the Englewood Chamber of Commerce; associated with Porter Sanitarium and Hospital in Denver; died in the Veterans Administration Hospital, Denver, Feb. 3, aged 80, of pneumonia.

Aune, Martin ⊕ Minneapolis; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1907; received the Medal of Merit for exceptionally meritorious and distinguished service with the 151st Field Artillery, Minnesota National Guard; during World War II medical director of the Twin City Ordnance; died Jan. 4, aged 84, of hemiplegia and cerebral arteriosclerosis.

Axtell, Robert John ⊕ Phoenix, Ariz.; Indiana University School of Medicine, Indianapolis, 1941; served a residency at Los Angeles County Hospital in Los Angeles, St. Francis Memorial and St. Joseph's hospitals in San Francisco; veteran of World War II; died in Downey, Calif., Jan. 28, aged 40.

Balás, Belá Colman ⊕ Swartswood, N. J.; Mag Királyi Pázmány Petrus Tudomanyegyetem Orv Fakultasa, Budapest, Hungary, 1921; formerly cl ical associate in obstetrics at Loyola Univers School of Medicine in Chicago, where he was the staffs of the Mercy and Illinois Masonic h pitals; died Feb. 15, aged 61.

Barroll, Ida Marie Laird, Grand Rapids, Mic Cornell University Medical College, New Y City, 1907; died in the Butterworth Hospital F 8, aged 76, of carcinoma of the stomach.

Baum, Sina ⊕ Perth Amboy, N. J.; New York U versity College of Medicine, New York City, 19 certified by the National Board of Medical aminers; veteran of World War II; died Jan. aged 40.

Beazell, James Myler ⊕ Colorado Springs, Co Northwestern University Medical School, Chica 1939; formerly on the faculty of his alma mat specialist certified by the American Board of ternal Medicine; veteran of World War II; on t staff of Memorial, Glockner–Penrose, and St. Francis hospitals; died Feb. 7, aged 49.

Bendel, William Louis ⊕ Monroe, La.; Tulane University School of Medicine, New Orleans, 1916; member of the Southeastern Surgical Congress; fellow of the International College of Surgeons and the American College of Surgeons; veteran of World War I; associated with the E. A. Conway Memorial Hospital and the Wright Bendel Clinic; for a time on the faculty of his alma mater; vice-president and director of the Peoples Building and Loan Association; died Feb. 10, aged 63.

Bennett, George Allen, Philadelphia; born in Water Valley, Miss., in 1904; Ludwig–Maximilians–Universitat Medizinische Fakultat, München, Bavaria, Germany, 1937; at one time taught at Baylor University College of Medicine in Dallas, Texas, Harvard Medical School in Boston, Georgetown University School of Medicine in Washington, D. C., and at his alma mater; became professor of anatomy and director of the Daniel Baugh Institute of Anatomy on June 1, 1948, at Jefferson Medical College, where he was dean since 1950; member of the American Association of Anatomists, American Association for the Advancement of Science, Association of American Medical Colleges, and Phi Beta Pi National Medical Fraternity; recipient of many scientific awards; received an honorary degree of doctor of science from St. Joseph's College, and doctor of laws from Grove City (Pa.) College, and doctor of laws from

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⊕ Indicates Member of the American Medical Association.

Temple University, Philadelphia, Dickinson College, Carlisle, Pa., and Ursinus College, Collegeville, Pa.; awarded the decoration of the Cuban National Order "Carlos Finley"; died in the Albert Merritt Billings Hospital in Chicago Feb. 27, aged 53, of myocardial infarction.

Berg, Alfred Maurice ⊕ Louisville, Ky.; University of Louisville School of Medicine, 1945; served on the faculty of his alma mater; certified by the National Board of Medical Examiners; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; veteran of World War II and Korean War; associated with Norton Infirmary, Kentucky Baptist Hospital, and the Jewish Hospital, where he died Jan. 25, aged 35, of cancer.

Beyer, Arthur Edwin, Guttenberg, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; died Dec. 23, aged 84, of heart disease.

Blanks, Thomas Ramsey ⊕ Rossville, Ga.; University of Tennessee College of Medicine, Memphis, 1931; interned at the Baroness Erlanger Hospital in Chattanooga, Tenn.; died in Chattanooga, Tenn., Jan. 31, aged 54, of coronary thrombosis.

Boon, Udonna Clifton, Chickasha, Okla.; Medical Department of Tulane University of Louisiana, New Orleans, 1898; an associate member of the American Medical Association; died in Round Lake, Ill., Feb. 8, aged 83, of cerebral hemorrhage.

Bowlen, John Joseph ⊕ Akron, Ohio; University of Louisville (Ky.) School of Medicine, 1926; member of the American Academy of General Practice; veteran of World War II; died in the City Hospital Feb. 19, aged 56.

Brooks, Adrain DeLoh, Jackson, Tenn.; Meharry Medical College, Nashville, 1916; died in Toledo, Ohio, Jan. 28, aged 64.

Brown, Porter D. ⊕ Glendale, Calif.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1910; member of the Kansas Medical Society; specialist certified by the American Board of Obstetrics and Gynecology; for many years practiced in Salina, Kan.; died in the Memorial Hospital Feb. 10, aged 77, of cerebral thrombosis and arteriosclerosis.

Budington, Harold Fairchild ⊕ Fiskdale, Mass.; Cornell University Medical School, New York City, 1909; veteran of World Wars I and II; formerly practiced in Springfield, where he served on the staff of the Wesson Memorial Hospital; died Feb. 13, aged 70.

Burns, John Albert, Atlanta, Ga.; Medical College of Georgia, Augusta, 1953; interned at St. Mary's Hospital in Athens; served a residency at Veterans Administration Hospital, Jefferson Hill Hospital, and University Hospital and Hillman Clinic, all in Birmingham, Ala.; on duty with the U. S. Air Force Reserve; service member of the American Medical Association; died in French Morocco, Jan. 19, aged 28, in a plane crash.

Burroughs, Carroll Arnold ⊕ Frankfort, Ind.; Indiana University School of Medicine, Indianapolis, 1930; member of the Association of Life Insurance Medical Directors of America; medical director of Peoples Life Insurance Company; on the staff of the Clinton County Hospital, where he died Feb. 9, aged 56, of coronary thrombosis.

Bury, Charles Lewis, Geddes, S. D.; Chicago College of Medicine and Surgery, 1913; died Jan. 8, aged 74.

Cadwell, Ernest, Rialto, Calif.; Hering Medical College, Chicago, 1897; died in the Riverside (Calif.) Community Hospital Jan. 29, aged 85, of a heart attack.

Caldwell, Ida May Westlake, Newport, Ky.; Medical Department of the University of Cincinnati, 1912; died in the William Booth Memorial Hospital, Covington, Nov. 1, aged 74, of arteriosclerosis.

Clark, Walter Eugene ⊕ Philadelphia, Miss.; University of Nashville (Tenn.) Medical Department, 1897; formerly associated with the Mississippi State Hospital at Whitfield; died in the Ochsner Foundation Hospital, New Orleans, Feb. 7, aged 83, of arteriosclerotic heart disease.

Connolly, John Patrick, Detroit; Wayne University College of Medicine, Detroit, 1933; member of the American Academy of General Practice; on the staff of the Mount Carmel Mercy Hospital, where he died Dec. 31, aged 53, of cerebral hemorrhage, hypertension, and arteriosclerosis.

Conway, Francis Michael, Sarasota, Fla.; Cornell University Medical College, New York City, 1928; served as chairman of the New York State Medical Practice Committee; specialist certified by the American Board of Surgery; member of the American Association for the Surgery of Trauma; fellow of the American College of Surgeons; at one time practiced in New York City, where he was on the staffs of the St. Vincent's, Harlem, and Gouverneur hospitals; died Feb. 21, aged 55, of uremia, chronic pyelonephritis, and hypertensive cardiovascular disease.

Deardorff, Oliver Morton ⊕ Fort Lauderdale, Fla.; Indiana University School of Medicine, Indianapolis, 1909; member of the Indiana State Medical Association; formerly practiced in Muncie, Ind.; died Dec. 27, aged 80, of acute myocardial infarction, and arteriosclerosis.

Deming, Charles Kenneth ⊕ New Haven, Conn.; Columbia University College of Physicians and

Surgeons, New York City, 1917; for many years on the faculty of Yale University Medical School; died Feb. 21, aged 64, of arteriosclerotic heart disease.

Devine, Joseph Clark ⊕ Fond du Lac, Wis.; Marquette University School of Medicine, Milwaukee, 1927; fellow of *the American College of Surgeons*; associated with St. Agnes Hospital; died Jan. 28, aged 56, of acute myocardial infarction.

Dixon, Thomas Edison ⊕ Temple, Texas; Meharry Medical College, Nashville, Tenn., 1916; died Feb. 1, aged 66.

Dockery, Charles A., South Milwaukee, Wis.; Milwaukee Medical College, 1903; served as city health officer; died in St. Luke's Hospital Feb. 10, aged 88, of common duct stones with cholangitis and liver disease.

Doerfler, William John, Hastings-on-Hudson, N. Y.; University and Bellevue Hospital Medical College, New York City, 1909; member of the Medical Society of the State of New York; formerly health officer; associated with St. Agnes Hospital in White Plains and St. John's Riverside Hospital in Yonkers, where he died Dec. 27, aged 72.

Douglas, William James, Atkinson, Neb.; Omaha Medical College, 1900; veteran of World War I; served as mayor; died Jan. 23, aged 79, of cerebral arteriosclerosis.

Drury, Frederic Frank ⊕ Gouverneur, N. Y.; Bellevue Hospital Medical College, New York City, 1891; past-president of St. Lawrence County Medical Society; for many years county coroner; associated with the Edward John Noble Hospital; died Feb. 10, aged 89.

Edmonds, William, Nebraska City, Neb.; Jefferson Medical College of Philadelphia, 1900; an associate member of the American Medical Association; veteran of World War I; served on the staff of St. Mary's Hospital, where he died Jan. 24, aged 86, of influenza and bronchopneumonia.

Fenner, Edwin Ferebee, Henderson, N. C.; University of Maryland School of Medicine, Baltimore, 1905; member of the Medical Society of the State of North Carolina; surgeon for the Seaboard Air Lines; county prison camp physician; colonel in the U. S. Army, National Guard; veteran of World War II; died Feb. 2, aged 77, of heart disease.

Frazier, Harry Stucky ⊕ Louisville, Ky.; University of Louisville School of Medicine, 1926; assistant professor of medicine at his alma mater; fellow of the American College of Physicians; associated with Norton Memorial Infirmary and the St. Joseph Infirmary, where he died Feb. 8, aged 57, of chronic glomerular nephritis with uremia.

Fugina, George Romeo ⊕ Mankato, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; served on the staffs of Immanuel and St. Joseph's hospitals; died Jan. 10, aged 72, of coronary thrombosis.

Gansevoort, Andrew ⊕ Chicago; Rush Medical College, Chicago, 1903; associated with Roseland Community Hospital, where he died Feb. 24, aged 86, of coronary occlusion.

Garol, Hugh William ⊕ San Francisco; born in Goldfield, Nev., Dec. 10, 1910; McGill University Faculty of Medicine, Montreal, Que., Canada, 1938; specialist certified by the American Board of Psychiatry and Neurology and the American Board of Neurological Surgery; member of the American Academy of Neurology, Association for Research in Nervous and Mental Disease, Congress of Neurological Surgeons, and the Harvey Cushing Society; fellow of the International College of Surgeons and the American College of Surgeons; veteran of World War II; at one time on the faculty of the University of Illinois College of Medicine in Chicago; associated with O'Connor Hospital in San Jose, St. Luke's, Mount Zion, Children's, St. Francis, and French hospitals; consultant, Veterans Administration Hospital in Palo Alto, Agnews State Hospital in Agnew, and Letterman Army Hospital; died Feb. 14, aged 47, of severe coronary arteriosclerosis.

Gibbons, Henry Walter, San Francisco; Cooper Medical College, San Francisco, 1902; an associate member of the American Medical Association; served as secretary of the California Academy of Medicine; formerly on the faculty of his alma mater and of Stanford University School of Medicine; for many years medical director and vice-president of California–Western States Life Insurance Company; died Feb. 6, aged 80, of chronic cor pulmonale and chronic emphysema.

Glick, William Henry, Stroudsburg, Pa.; Jefferson Medical College of Philadelphia, 1905; died in St. Luke's Hospital Feb. 3, aged 79, of arteriosclerotic heart disease and bronchopneumonia.

Hansen, Howard Thorwald ⊕ Milwaukee; Marquette University School of Medicine, Milwaukee, 1930; served as health officer of Lake Township; on the staff of Mount Sinai Hospital; died in Misericordia Hospital Feb. 5, aged 57, of renal failure due to nephrosclerosis.

Hardinger, Ralph Wilbur ⊕ East Moline, Ill., Rush Medical College, Chicago, 1915; past-president of the Rock Island County Medical Society; veteran of World War I; on the staff of the Moline Public Hospital, where he died Feb. 9, aged 67, of carcinoma of the prostate.

Heaton, Hugh, Los Angeles; Cleveland Homeopathic Medical College, 1908; veteran of the Spanish–American War and World War I; died Feb. 11, aged 84.

Hilger, Andrew William ⊕ St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; associated with St. Joseph's and Miller hospitals; died in St. Mary's Hospital, Rochester, Minn., Jan. 6, aged 78, of coronary arteriosclerosis.

Hill, Lewis Brown, Towson, Md.; born in Lima, Ohio, Feb. 18, 1894; Medical College of Virginia, Richmond, 1916; assistant professor of psychiatry at Johns Hopkins University School of Medicine in Baltimore; member and past-president of the American Psychoanalytic Association; fellow of the American Psychiatric Association; served as assistant commissioner of the Department of Mental Hygiene of Massachusetts; formerly associated with the Foxboro (Mass.) State Hospital and the Worcester (Mass.) State Hospital; director emeritus, Baltimore Psychoanalytic Institute; psychiatrist in chief, Sheppard and Enoch Pratt Hospital; author of "Psychotherapeutic Intervention in Schizophrenia"; died Feb. 4, aged 63, of coronary disease.

Hope, Hugh Allen ⊕ Hunter, Kan., Kansas Medical College, Medical Department of Washburn College, Topeka, 1909; served as a member of the state board of health; past-president of the Washburn University Alumni Association; died in the Stormont-Vail Hospital, Topeka, Feb. 6, aged 72, of coronary heart disease.

Horwitz, Abraham M., Fort Lauderdale, Fla.; University of Buffalo School of Medicine, 1916; veteran of World War I; for many years practiced in Buffalo; died Jan. 31, aged 69, of primary carcinoma of the lung with bone and liver metastases.

Hurlbutt, Bryant Charles ⊕ Rushville, N. Y.; Albany (N. Y.) Medical College, 1933; certified by the National Board of Medical Examiners; health officer of Rushville, Potter, and Gorham; president of the medical staff of F. F. Thompson Hospital in Canandaigua; died in Rochester Feb. 9, aged 50, of pulmonary infarction due to pulmonary embolism.

Johnson, Bertha Florence, Troy, Pa.; New York Medical College and Hospital for Women, Homeopathic, New York City, 1905; died in Ossining, N. Y., Jan. 29, aged 77.

Johnson, James Sidney ⊕ Wickliffe, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; member of the Illinois State Medical Society; served on the board of education and Cairo (Ill.) Chamber of Commerce, of which he was president for seven years; for many years associated with St. Mary's Hospital, where he was chief of staff, and where he died Jan. 6, aged 73, of coronary thrombosis.

Kiser, Edgar Fayette ⊕ Indianapolis; born in Union City, Ind., April 16, 1880; Medical College of Indiana, Indianapolis, 1903; professor emeritus of medicine at the Indiana University School of Medicine, where he served as clinical professor of cardiology and lecturer on the history of medicine; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; past-president of the Indianapolis Medical Society and the Indiana Association of the History of Medicine; member of the board of directors of the Marion County Tuberculosis Association; veteran of World War I; on the attending staff, Indiana University Hospital, on the consultant staff, Methodist Episcopal and St. Vincent's hospitals, and consulting physician, Indianapolis General Hospital; died Jan. 22, aged 77, of coronary occlusion.

Korth, Zeno Nicholas ⊕ Omaha; Creighton University School of Medicine, Omaha, 1925; clinical professor of dermatology at his alma mater; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; veteran of World Wars I and II; served as secretary of the Omaha Rotary Club; associated with St. Catherine's Hospital and St. Joseph's Hospital, where he died Jan. 30, aged 59, of carcinoma.

Latterner, Frederick Henry, Los Angeles; Medical College of Ohio, Cincinnati, 1893; died Jan. 16, aged 87.

Leavenworth, Richard Ormond ⊕ St. Paul; University of Minnesota Medical School, Minneapolis, 1914; formerly on the faculty of his alma mater; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served in France during World War I; associated with Ancker, Children's, St. Joseph's, and St. Luke's hospitals; died Jan. 29, aged 67, of pulmonary embolism and congestive heart failure.

Lehnkering, Charles Frederick, Darlington, Wis.; Jefferson Medical College of Philadelphia, 1895; died Jan. 9, aged 88.

Lykins, Benjamin E., Ashland, Ky.; University of Louisville (Ky.) Medical Department, 1909; died in the Good Samaritan Hospital, Lexington, Jan. 29, aged 72, of fracture of left hip and pneumonia.

McArthur, Rutherford Benjamin, Indianapolis; Meharry Medical College, Nashville, Tenn., 1912; died Jan. 31, aged 73.

McClure, Philip Luther, Fort Cobb, Okla.; University of Arkansas School of Medicine, Little Rock, 1907; an associate member of the American Medical Association; died in Chickasha Jan. 1, aged 81.

McDonnell, Henry Barnett, College Park, Md.; College of Physicians and Surgeons, Baltimore, 1888; an associate member of the American Medical Association; served as state chemist of Maryland; for many years a member of the faculty of the University of Maryland School of Medicine in Baltimore; died in the Leland Memorial Hospital, Riverdale, Feb. 8, aged 94.

Monson, Essex, Detroit; Meharry Medical College, Nashville, Tenn., 1951; died in the Receiving Hospital Jan. 20, aged 35.

Nelson, Donald Clarence ⊕ Jonesboro, Tenn.; College of Medical Evangelists, Loma Linda and Los Angeles, 1930; member of the American Academy of General Practice; veteran of World War II; associated with Memorial Hospital in Johnson City; died in the University of Tennessee Hospital in Knoxville, Jan. 29, aged 55, of myocarditis and endocarditis.

O'Brien, Charles Francis ⊕ Jackson, La.; Georgetown University School of Medicine, Washington, D. C., 1923; member of the American Psychiatric Association; associated with East Louisiana State Hospital; served on the staff of the Bangor (Maine) State Hospital; died Jan. 20, aged 62.

Palmer, Marion Cherigny ⊕ Tryon, N. C.; Medical College of South Carolina, Charleston, 1910; veteran of World War I; chief of staff, St. Luke's Hospital, where he died Jan. 28, aged 73, of idiopathic pericarditis.

Palmer, W. Rolland ⊕ Kansas City, Kan.; Kansas City (Mo.) Medical College, 1898; veteran of World War I; formerly surgeon for the police department; served as county coroner; associated with Providence, Bethany, and St. Joseph hospitals; died Jan. 30, aged 80, of coronary occlusion.

Peterson, John Chaney ⊕ Lincoln, Neb.; University of Nebraska College of Medicine, Omaha, 1928; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; president of the Nebraska Academy of Ophthalmology and Otolaryngology; veteran of World War II; on the staff of the Lincoln General Hospital; died Feb. 13, aged 55.

Pierce, Daniel Oliff ⊕ Jonestown, Miss.; Memphis (Tenn.) Hospital Medical College, 1907; served as mayor; past-president of Clarksdale and Six Counties Medical Society; associated with Coahoma County Hospital, Clarksdale, where he died Jan. 24, aged 74, of acute myocardial infarction.

Potter, Ellen Culver ⊕ Trenton, N. J.; born in New London, Conn., Aug. 5, 1871; Woman's Medical College of Pennsylvania, Philadelphia, 1903; emeritus president at her alma mater, where she served as clinical professor of gynecology; at one time associated with Howard, Germantown, and Philadelphia General hospitals in Philadelphia; chief of the division of child health, Pennsylvania Health Department, 1920-1921, when she became director of the division of child welfare of Pennsylvania, serving until 1923; from 1923 to 1927 secretary of welfare for the state of Pennsylvania; for many year medical director of the New Jersey State Department of Institutions and Agencies; deputy commissioner for welfare of New Jersey from 1946 t 1949, when she retired; past-president of the American Medical Women's Association, which in 195 named her "Medical Woman of the Year"; past president of the New Jersey Welfare Council an the National Conference of Social Work; recipien of the Terry Award, American Public Welfare Association, of which she was a member of the boar of directors; in 1953 received the Elizabeth Blackwell Award; fellow of the American Public Healt Association and the American College of Physician member of the American Association of Soci Workers, American Association of University Wom en, American Sociological Association, America Association for the Advancement of Science, N tional Organization of Public Health Nurses, Ame ican Geriatrics Association, and many others; i 1936 received the LL.D. degree from Rutgers Un versity in New Brunswick, where her influence i the medical and welfare field resulted in the e tablishment of the Ellen C. Potter Scholarship i 1952; associated with the Hospital of the Womans Medical College of Pennsylvania, where she was at one time medical director, and where she died Feb. 8, aged 86, of general arteriosclerosis and fractured hip.

Prill, Albert G. ⊕ Scio, Ore. (licensed in Oregon in 1894); past-president of the Linn County Medical Society; served as mayor of Scio two terms; for many years member of the school board, city health officer, and president of the Linn County fair; district surgeon, Southern Pacific Railroad for 50 years; died in Albany Jan. 26, aged 88.

Ralyea, John Ross ⊕ Highland Park, Mich.; Wayne University College of Medicine, Detroit, 1943; interned at the University of Chicago Clinics in Chicago, where he served a residency in anesthesia; veteran World War II; chief anesthetist at Highland Park General Hospital; recently arrived in Finland on a Fulbright fellowship to serve as a visiting professor at Abo University; died in Turku, Finland Jan. 29, aged 41, of coronary disease.

Rawlings, James V., Indianapolis; College of Physicians and Surgeons, Baltimore, 1887; died Jan. 27, aged 99, bronchopneumonia.

Reeves, Claude Lee ⊕ Oklahoma City, Okla.; University of Oklahoma City School of Medicine, Oklahoma City, 1931; veteran of World War I; died Jan. 13, aged 64, of myocardial infarction and coronary atherosclerosis.

Roth, Samuel Robert, Newark, N. J.; University and Bellevue Hospital Medical College, New York City, 1922; fellow of the American College of Surgeons; associated with Newark Beth Israel Hospital, where he died Jan. 24, aged 62, of respiratory failure and cardiovascular accident.

Ruble, Roy Henry, Limestone, Tenn.; University of Louisville (Ky.) Medical Department, 1913; vice-president of the Washington College Academy, of which he was a trustee; associated with the Memorial Hospital in Johnson City; died Jan. 18, aged 73, of myocardial infarction.

Sethney, Henry Thomas ⊕ Tulsa, Okla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the Michigan State Medical Society; past-president of the Menominee County Medical Society; veteran of World War I; for many years practiced in Menominee, Mich., where he was city health officer, member of the board of education and on the staff of the St. Joseph–Lloyd Hospital; died Jan. 18, aged 75, of emphysema.

Shangle, Milton Allison ⊕ Elizabeth, N. J.; Columbia University College of Physicians and Surgeons, New York City, 1900; past-president of the Society of Surgeons of New Jersey and the Union County Medical Society; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; veteran of World War I; for many years associated with Elizabeth General Hospital; died Feb. 7, aged 78, of cancer of the lung.

Smith, Howard Wilford ⊕ Woodward, Iowa; Drake University College of Medicine, Des Moines, 1908; past-president of the school board; died Jan. 31, aged 76, of cardiac decompensation.

Sohon, Elizabeth ⊕ Washington, D. C.; Howard University College of Medicine, Washington, D. C., 1908; died in the Doctors Hospital Feb. 1, aged 75, of coronary disease.

Stacey, Harley James ⊕ Oklahoma City, Okla.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; for many years practiced in Leavenworth, Kan.; member of the Kansas Medical Society; died Jan. 27, aged 87, of bronchopneumonia.

Stern, Harry Lawrence ⊕ Detroit; Detroit College of Medicine and Surgery, 1927; member of the Industrial Medical Association and the American Academy of General Practice; on the staff of the Grace Hospital; died in the Henry Ford Hospital Jan. 25, aged 58.

Stuart, Frederick B., Jonesboro, Tenn.; Baltimore Medical College, 1904; on the staff of the Memorial Hospital, Johnson City, where he died Jan. 16, aged 74, of a heart attack.

Swab, Charles Casper, Cedar Rapids, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; died Jan. 24, aged 81.

Tweddel, George Kay ⊕ Paterson, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1916; member of the American Academy of Dermatology and Syphilology; served in France during World War I; attending dermatologist and past-president of the medical board at the Paterson General Hospital, where he died Jan. 17, aged 67, of emphysema.

VanGaasbeek, Harold, Springfield, Mass.; Tufts College Medical School, Boston, 1918; member of the Massachusetts Medical Society; member of the staff of the Providence Hospital in Holyoke; died Feb. 3, aged 67, of cancer.

Ward, Grant Eben ⊕ Baltimore; born in Lorain, Ohio, Aug. 28, 1896; Johns Hopkins University School of Medicine, Baltimore, 1921; since 1949 associate professor of surgery at his alma mater, where he joined the faculty as assistant in surgery in 1927 and subsequently became instructor in surgery, associate in surgery, and assistant professor of surgery; instructor of surgery at the University of Maryland School of Medicine from 1930 to 1935, associate in surgery from 1935 to 1937, and associate professor of surgery from 1937 to 1951; served on the faculty of the Baltimore College of Dental Surgery, University of Maryland; member of the founders group of the American Board of Surgery; past-president of the Baltimore City Medical Society; served as vice-president of the Medical and Chirurgical Faculty of Maryland; from 1948 to 1951 president of the Maryland division of the American Cancer Society and chairman of the board of directors from 1948 to 1956; formerly vice-president of the American Academy of Physical Therapy and the American Congress of Physical Therapy; member of the Southern Surgical Association and the Southeastern Surgical Congress; fellow of the American College of Surgeons; received an honorary doctor of science degree from Baldwin-Wallace College, Berea, Ohio, in 1940; joint author of "Electrosurgery" and "Diagnosis and Treatment of Tumors of the Head and Neck"; on the advisory board of the *American Journal of Surgery;* associated with the Church Home and Infirmary, Hospital for the Women of Maryland, and Union Memorial Hospital; on the staff of the Johns Hopkins Hospital, where he died Feb. 16, aged 61, of cancer.

Weigele, Carl Edward ⊕ Trenton, N. J.; Columbia University College of Physicians and Surgeons, New York City, 1920; specialist certified by the American Board of Pediatrics; assistant state commissioner of health and director of the division of preventable diseases; died Feb. 10, aged 64, of coronary occlusion.

Willison, Clayton ⊕ Sault Sainte Marie, Mich.; Chicago Homeopathic Medical College, 1891; past-president and secretary of the Chippewa County Medical Society; for many years employed by the U. S. Public Health Service; on the staff of the War Memorial Hospital; died Jan. 30, aged 87, of coronary thrombosis.

FOREIGN LETTERS

AUSTRIA

Tuberculosis in Pregnancy.—At the meeting of the Society of Gynecology and Obstetrics in December in Vienna, Dr. H. Jentgens of Cologne, Germany, reported on a series of over 2,000 tuberculous pregnant women. In general pregnancy does not alter the treatment of the tuberculosis. Good results have substantially increased since the advent of chemotherapeutic agents, all of which are well tolerated by pregnant women and have no untoward effect on the fetus. It is advisable, however, not to give isoniazid for six weeks after parturition because of the hemorrhage promoting qualities of the drug. All operations, including collapse and resectional therapy, may be performed during the entire period of pregnancy. Four weeks before the calculated date of delivery, however, only the patients with vital indication for such an operation should be operated on. If an operation is indicated, no difference should be made between the treatment of a pregnant and a nonpregnant woman. This applies also when a bilateral operation is indicated.

Collapse therapy brought about healing of cavities, a negative sputum, and regression of the disease in 75 patients. No impairment of respiration was observed during parturition. Resections were successfully performed on 18 pregnant women. These included a pneumonectomy on one, bilateral lobectomy on two, lobectomy with resection of a segment on two, lobectomy with decortication on one, plain lobectomy on five, lobectomy with subsequent thoracoplasty on two, resection of a segment on four, and resection of a bronchial fistula with pleurectomy and thoracoplasty on one. No complication occurred during the course of delivery and the puerperium. Nitrous oxide and oxygen anesthesia was used with the usual premedication. No impairment of the function and findings in the lung was observed during the period of pregnancy in six women who were subjected to lobectomy or to segmental resection before becoming pregnant. This was also true of four patients who were subjected to a pneumonectomy prior to pregnancy.

Patients with extrapulmonary tuberculosis require long and intensified tuberculostatic treatment and, depending on the localization of the disease, may have to have additional surgical treatment. The speaker treated pregnant women with tuberculosis of the bones (17), tuberculosis of the lymph nodes (11), renal tuberculosis (8), bronchial tuberculosis (5), tuberculous meningitis (4), laryngeal tuberculosis (2), ocular tuberculosis (2), and tuberculosis of the mammary gland (1). The success of the treatment of tuberculosis depends on the understanding and cooperation of the patient. If treatment of the tuberculosis is adequate, pregnancy has no untoward effect on the course of the disease. The interruption of pregnancy is not indicated in the modern treatment of tuberculosis. More than 80% of the patients with open tuberculosis, who consented to be treated, were discharged from the hospital with closed tuberculosis. Dr. H. Knaus said that despite the good results reported, pregnancy should be avoided in patients with tuberculosis.

Nephrosis in Children.—At the meeting of physicians in Vienna on January 17, Dr. A. Rosenkranz stated that when prednisone and prednisolone were given to nephrotic children complete remission was obtained in most cases. To maintain this remission, prolonged intermittent treatment with these hormones is necessary. In those in whom no improvement resulted from this treatment or in whom undesirable side-reactions developed, the hormones should be given cautiously or discontinued.

Recurrent Abdominal Pains in Children.—At the same meeting Drs. K. Kundratitz and H. G. Wolf reported on 200 children with chronic recurrent abdominal pains. Possible causes included lesions in the digestive tract, allergy, infestation with worms, emotional upsets, and functional disorders. In their series, 53% of roentgenologic examinations showed organic lesions of the gastrointestinal tract (chronic appendicopathia, terminal ileitis, gastroduodenitis, enteritis, enteroptosis, and duodenal ulcer).

Antibiotic Resistance in Escherichia Coli.—At the meeting of the Society for Pediatrics in Vienna in December, H. H. Gross reported that 34 infants were involved in an epidemic of enteritis caused by Escherichia coli, which occurred at the children's clinic of the University of Vienna and lasted from February to October, 1957. Although in vitro tests showed that the Esch. coli 0_{111}:B4 strains were sensitive to erythromycin and neomycin, in vivo they proved to be resistant. Eight of the children died in the course of the epidemic, and six others, in addition to the enteritis caused by Esch. coli, had

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The items in these letters are contributed by regular correspondents in the various foreign countries.

ieumonia or intracranial hemorrhages. An attmpt was made to disinfect the digestive tract ith formaldehyde-sulfathiazole, iodochlorhydroxyin, and chlorquinaldol and this was apparently ccessful. Furthermore, there was evidence that urslings also harbor strains of Lactobacillus bifidus hich are either sensitive or resistant to antibiotics ecause, despite intensive therapy with antibiotics, mixed flora of L. bifidus strains persisted in conadistinction to earlier experiences. These strains isappeared only after all therapy with antibiotics *as discontinued*.

H. P. Krepler pointed out that in order to be able *o estimate* the probable clinical efficacy from the esults of in vitro tests of the bacteriostatic and acteriddal power of antibiotics, it is necessary to ake into account the quantitative relationships of he in vitro tests compared to the concentration of ntibiotics that can be achieved at the site where he bacteria are to be influenced. In patients with dyspepsia and enteritis due to Esch. coli, preference should be given to antibiotics that combine poor absorption with intense local action. In the summer of 1957 an epidemic increase in enteritis due to Esch. coli 0_{111}:B4 strains was observed also at St. Anna Children's Hospital. Forty-one different strains were isolated. When 35 of these strains were studied for sensitivity to antibiotics, it was found that 85% were resistant to the tetracyclines. Sensitivity was greatest to neomycin (73% with one concentration and an additional 21.7% with a higher concentration). Satisfactory sensitivity to chloramphenicol was observed in 43% of the Esch. coli strains, to tetracycline in 11.4%, to oxytetracycline in 8.4%, and to chlortetracycline in 2.8%. Clinically nebacetin (neomycin plus bacitracin) in a dosage corresponding to 50 mg. of neomycin per kilogram of body weight daily for from 5 to 10 days proved far superior to treatment with chloramphenicol, the tetracyclines, and the poorly soluble sulfonamides. This was demonstrated on the basis of the weight curves of those with severe infections. Bacteriological cure was not obtainable with the same degree of assurance, possibly due to reinfection or inadequate treatment. After discharge from the hospital, excretion of Esch. coli usually subsided promptly in clinically cured patients, and for this reason early discharge was recommended.

H. F. Ernst reported on the examination of stools from nurslings in the pediatric department of the Wilhelmine Hospital in which particular attention was given to the Esch. coli strains cultured from the stools and to their sensitivity to antibiotics; 80% of the strains were sensitive to chloramphenicol. Stools in which Esch. coli 0_{111}:B4 were found almost all belonged to the group resistant to chloramphenicol. They were sensitive in vitro to nebacetin and neomycin, whereas other pathogenic strains of Esch. coli such as 55:B5 and 86:B9 were sensitive to chloramphenicol. H. A. Solé reported that he had observed no such epidemic at his hospital, possibly because all nurslings are separated by walls. He doubted the value of testing organisms against antibiotics because an antibiotic may be ineffective in an in vitro test and still be effective in vivo.

CANADA

Child Health Plan.—In January, 1957, the government of Newfoundland inaugurated the first stage of a children's health plan, which provided free hospitalization, including laboratory and x-ray services, drugs, and outpatient diagnostic procedures for all persons under 16. The government implemented the second stage of their program by initiating on Feb. 1, 1958, free medical and surgical services for all hospital inpatients under 16. Since this step was the immediate concern of the Newfoundland Medical Association, the introduction of the second stage was preceded by negotiations between the association and the government, with assistance from the headquarters of the Canadian Medical Association. An agreement was drawn up and approved by both parties. This agreement embodied the principles of free choice of physician by patient and of patient by physician where practicable, respect for professional confidences, and fees for service based on the 1956 schedule of fees of the Newfoundland Medical Association. A committee on medical services, with most members appointed by the Medical Association, will make recommendations in cases of economic disputes, and an advisory committee from the profession will consult with the Minister of Health and study and recommend measures designed to maintain and improve the quality of care under the new services. Though the negotiations have been conducted with great good will on the part of the profession, the Medical Association felt bound to draw to the attention, both of the Minister of Health and of the press, the inadequacy of hospital facilities for the care of children in Newfoundland. The profession believe that provision of desperately needed additional hospital beds and diagnostic services should have preceded the introduction of this second stage, but they will cooperate loyally in operating the plan.

Scurvy.—Scurvy would hardly be expected to be a growing menace in the larger cities, but physicians from the Hospital for Sick Children, Toronto (*Canad. M. A. J.* 78:177, 1958) have reported a decided rise in the incidence of infantile scurvy in their area, and Winnipeg physicians are also alarmed at this problem. Until 1953, the average annual incidence of admissions for scurvy to the Toronto hospital was seven, but in 1954 there were 46 cases, and in 1955 there were 25. The clinical findings were usually of the classical type, with hyperirritability, pseudoparalysis of the legs, hemorrhagic tendencies, anemia, and stepping of the costochondral junctions. The diagnosis was often overlooked at first, and was occasionally not even established in hospital until clinical response to treatment was observed. Most of the patients were between 6 and 12 months old. No patient was breast fed at the time of admission, and the average duration of breast feeding had been less than 11 days. On questioning, nearly 80% of the parents admitted that the infant had been receiving neither orange juice nor synthetic ascorbic acid. The rest may charitably be termed "unreliable witnesses." Because some parents claimed to have diluted the orange juice with boiling water, experiments were performed to test the stability of vitamin C in orange juice by boiling and alkalinizing. The authors concluded that the antiscorbutic activity of orange juice will withstand the well-meaning but unnecessary manipulations of the most imaginative mother. In other words, the parents were certainly not giving their infants an adequate supply of vitamin C.

Since many of the children were of later birth rank, it may be that maternal solicitude had become somewhat diluted by the time of their arrival. Another source of trouble was the reliance on synthetic vitamin preparations, since the multiplicity of these often confuse parents who may unthinkingly give a preparation with no vitamin C content. The authors recommended the following measures to ensure that every infant receives at least 30 mg. of vitamin C daily: the use of the press and other mass media to educate parents, more specific advice from physicians, instruction by pharmacists on vitamin C content of various preparations, and incorporation of vitamin C into certain foodstuffs. They also urge breast feeding, but this is so obvious and sensible a measure that it is unlikely to find much favor.

Apiol Poisoning.—Montreal physicians have been worried lately about the use of certain apiol preparations by the public. These preparations, which may also contain purgatives and ergot, are used for self-medication in patients with secondary amenorrhea, and it is stated that several instances of poisoning from their use have occurred in Western Quebec. Indeed the Committees on Pharmacy and Maternal Welfare of the Canadian Medical Association have already condemned the sale of this drug and urged its restriction by the federal government. Lowenstein and Ballew (*Canad. M. A. J.* 78:195, 1958) reported a fatal case of acute hemolytic anemia, thrombocytopenic purpura, nephrosis, and hepatitis in a 28-year-old woman, due in their opinion to ingestion during two weeks of 36 capsules containing a total of 10.8 Gm. of apiol. The preparation, which is alleged to stimulate the myometrium, was taken to procure an abortion. The patient had also given herself a pelvic peritonitis by unskilful use of a douche nozzle. Cases of apiol poisoning (mostly reported in the European literature) can be divided into those (1) with extensive encephalopathy; (2) with acute nephrosis and hepatic dysfunction; and (3) due to contamination of the apiol with triorthocresylphosphate, an agent causing polyneuritis. The authors believe that in their province, and possibly elsewhere, apiol poisoning is commoner than is suspected and that there is no justification for its continued pharmaceutical use.

Tranquilizers.—The tranquilizers have never quite reached the level of popularity in Canada that they attained in the United States, and it is estimated that their sales here are now leveling off. At their peak in 1956, $5,000,000 worth were purchased but per capita consumption is now falling. Some of the newer ataractics were sold without prescription until the spring of 1958, when the federal government put a stop to this. In January and February, 1957, the government conducted a survey of drug stores and pharmacies across Canada to determine whether tranquilizers, sedatives, and amphetamines were being illegally sold without prescription. About 2,300 premises were visited by inspectors, and 127 proprietors were charged with illegal sales. The inevitable legal delays have meant that these pharmacists are only now (February, 1958) being brought to court and fined. Fines have ranged from $50 to $300 or more, but pharmacists have not taken the matter lying down. The Ontario College of Pharmacy has protested to the Department of National Health and Welfare in an open letter, in which they complain that after products had been allowed an unrestricted sale for as much as 18 months (and therefore were presumably not very harmful) they were suddenly restricted without sufficient notification. Concern has been expressed by magistrates at the long delay in taking action to protect the public by prosecution. while pharmacists pleading inadvertent mistakes on the part of their assistants have suggested that manufacturers ought to have recalled and repackaged preparations as soon as they were placed on the prohibited list. In some cases, restricted drugs were unwittingly sold from containers that had been in stock for years and bore no caution on their labels. The situation is further complicated by the fact that some tranquilizers still do not need a prescription.

Television Legs.—Scientists have expressed concern at the effects of television on body and soul, particularly in the young. Much of the fire has been directed at the unfortunate effects on the juvenile mind of the rubbish purveyed as entertainment, but others have been concerned at the effects on vision, and a writer in *J. A. M. A.* has given sage advice on counteracting adverse effects on the circulation. Not to be outdone, Canada has discovered the syndrome of "TV legs," thereby demonstrating what should have been obvious, namely, that if a youngster habitually slumps in front of a TV screen for hours at a time, he will not end up as physically fit as his forefathers did. A physical fitness director in a thriving Toronto suburb surveyed 300 children in a day-long series of tests, and showed that 55% could not pass the minimum tests and 85% failed the maximum tests. The most common fault was a lack of flexibility in the legs and lower back, traceable to spending long hours sitting in front of TV sets. There were also distinct arm and abdominal muscle weakness (half the boys were unable to do a single pushup), and an incidence of about 60% posture defects. Many children were also obese. The girls were fitter than the boys, though neither sex was particularly commendable physically. Similar findings have come to light in Ottawa, and it remains to be seen whether further surveys elsewhere will confirm this picture of physical unfitness. In any case, it is going to be difficult to find a set of controls who do not view TV and thus to assess the exact part played by this pastime in promoting ill-health.

DENMARK

Staphylococcic Pneumonia.—In their review of 13 cases of staphylococcic pneumonia in children, Kringelbach and Winge (*Ugeskrift for læger*, Jan 30, 1958) note that prior to the introduction of the sulfonamides staphylococci were responsible for only 10% of the cases of pleural empyema, whereas they now account for 50%. This is the more disquieting because a growing number of strains of staphylococci are now resistant to antibiotics. Such resistance may, however, be partially overcome in the case of penicillin by giving it in massive doses. At the children's hospital where these 13 cases were observed, there were 228 cases of pneumonia in the same period. Of the six deaths, three were due to staphylococcic pneumonia.

Sudden Death in Infancy.—Gormsen and co-workers (*Nordisk medicin*, Jan. 9, 1958) reported a series of 356 autopsies on infants found dead or whose sudden death was not expected and was inexplicable. Of the 356, 259 were classed as natural; 59.5% of these were boys. The remaining 97 included 50 perinatal deaths, 18 homicides, and 29 accidental deaths. In a consecutive series of 50 sudden natural deaths, 35 occurred in infants whose weight was below normal. Acute emphysema was found in 48 and otitis media in 24. Partial atelectasis was found in 28 and complete atelectasis in 8, but in no case were there macroscopic signs of bronchopneumonia. The cause of death was definitely established in 37 of the 50.

Reform of the Mental Health Service.—In the *Danish Medical Bulletin* for January, Dr. E. Strömgren recalls that in March, 1952, a commission was appointed to study the State Mental Health Service with special reference to the adaptation of the mental hospitals to present-day needs and forms of treatment. The commission's preliminary report in December, 1952, led to the passing of an act in 1953 authorizing a series of extensions and modernizations of the mental hospitals. In November, 1956, the commission's final report was published. It revealed a state of affairs whose correction would require 15 to 20 years. Meanwhile emergency measures had to be planned in such a way that they could be fitted into a long-term program. Mental hospitals in the future should be closely allied with general hospitals, but already existing mental hospitals are so badly needed that their geographical isolation from general hospitals does not warrant their suppression for several years to come. In 1950 there were just over two hospital beds in mental hospitals per 1,000 inhabitants in Denmark, whereas the corresponding rate was more than twice as high in certain other countries on the same cultural level.

It is curious that the mentally ill managed more easily without hospitalization in rural communities than in the cities as evidenced by the fact that in 1950 Copenhagen had 3.2 mental beds per 1,000 inhabitants, whereas the corresponding figure for communities outside Copenhagen was only 2.2. In 1937 less than 20% of the patients in Danish mental hospitals were 60 years old or over, whereas in 1952 the corresponding figure was 35%. The commission's program envisages the expenditure of 350 million kroner, the modernization of six of the seven state mental hospitals, and the conversion of the seventh to a nursing home. It also provides for the erection of 12 new mental hospitals with an accommodation of not more than 350 beds each, and the provision of seven nursing homes.

Whooping-Cough Vaccination.—A discussion on whooping-cough vaccination between the staff of the Serum Institute and a group of pediatricians was reported in *Nordisk medicin* for Jan. 9. It was concluded that the pediatricians should be allowed some latitude in deciding whether they were to confine the earliest vaccinations to the single whooping-cough vaccine or wait till the triple vaccine (whooping-cough, diphtheria, and tetanus) is given. Most of them, however, favored abandoning the early single whooping-cough vaccination and waiting till the fifth month of life when the triple vaccination could be given. It was also agreed that so long as the triple vaccine required further testing with regard to its efficacy and capacity to provoke complications, it would be well to restrict its application to a limited number of children in institutions in which the reactions could be closely followed.

GERMANY

Isar Hospital.—The 1,500-bed Isar Hospital built last year in Munich has several innovations. Heat in the building is transmitted throughout from the ceilings. The hospital functions like a well-run hotel, with a large menu and even a wine list. There is a hairdressing salon, a flower shop, and a shop selling frilly nightdresses and bed jackets. "To feel good is half the psychology of getting well," according to Professor Maurer, chief of the surgical service. A television camera above the operating table transmits pictures to a lecture room on the ground floor. There is a bathing pool for patients. The decorations of the rooms are a variation from accepted tradition, and in the corridors marble murals of birds appear around each corner.

INDIA

All-India Medical Conference.—Presiding over the 34th meeting of the All-India Medical Association in Bangalore in December, Dr. D. V. Venkappa urged that present methods of medical relief be replaced by a uniform system of government medical service in which every available medical practitioner should be employed and a large number of hospitals built and equipped. He also suggested the adoption of the panel system as opposed to the fee-for-service system uniformly used in places where the Employees' State Insurance Scheme was in operation. He said that the chief problems facing medical profession include extension of medical ef and the situation created by the embargo ced on the import of certain essential drugs and ocessed foods. Some of the resolutions passed stressed the necessity for a single and uniform standard of medical education and the need for liberalizing the import of essential drugs and equipment to meet the needs of the profession.

Meprobamate.—R. H. Dastur (*Journal of the Indian Medical Profession*, vol. 4, February, 1958) treated 74 office workers suffering from anxiety states (who were not improved with reassurance, phenobarbital, and bromides) with meprobamate. Most patients were from the middle class, only a few being senior executives; 13 were granted sick leave for four to six weeks and the rest continued to work. The usual dosage was a 400-mg. tablet three times a day for four to six weeks. The response was excellent in 40%, good in 45%, and poor in 15%. The side-effects included only minor complaints such as drowsiness, allergic skin rash, nausea, dizziness, and excessive sweating. The fact that patients can continue with their occupation during therapy makes this the drug of choice in controlling tension and anxiety states. Meprobamate acts on the thalamus and hence has no autonomic side-effects.

Combined Treatment for Tuberculosis.—Gupta and Mukerji (*Indian Journal of Tuberculosis*, vol. 5, December, 1957) stated that isobutyl sulfone has been shown to have a therapeutic activity comparable to that of dihydrostreptomycin (DHS) and isoniazid (INH) in experimental tuberculosis of guinea pigs. They compared the therapeutic effects of the new drug alone and in combination with DHS and INH in 141 male guinea pigs inoculated with Mycobacterium tuberculosis var. hominis. On the 21st day of infection, all animals were tuberculin positive. They were then divided into groups and treated with various combinations of the three drugs for 52 days. Thus the combined effect of giving 6, 12, 18, and 24 mg. per kilogram of body weight per day of isobutyl sulfone with 1.5 mg. per kilogram of body weight per day of INH was compared with that of isobutyl sulfone alone in comparable dosage. DHS was given subcutaneously and the other two drugs were given orally.

At the end of 52 days of therapy, after a final tuberculin test, the animals were killed, and the lung, liver, spleen, and regional lymph nodes of the treated and control groups examined. The erythrocyte count and hemoglobin level were determined. The untreated controls were seen to have moderately extensive disease. As judged from the percentage with active, inactive, and no lesions, a combination of isobutyl sulfone with either DHS or INH was superior to the sulfone alone at the various dosage levels. The beneficial effect of a combination of isobutyl sulfone with DHS and INH was more marked in the groups receiving 6 and 12 mg. per kilogram of body weight per day. Up to a dosage of 12 mg. per kilogram per day of the sulfone alone and in combination with DHS at 1.5 per kilogram per day the erythrocyte counts and hemoglobin levels were not significantly different from normal values. When the dosage of the sulfone was increased or when it was combined with 0.4 mg. of INH per kilogram per day there was a significant lowering of the erythrocyte count and hemoglobin level. Isobutyl sulfone showed an additive effect when combined with DHS and INH but no synergism was demonstrated.

Chlorpromazine in the Treatment of Psychosis.—Bhaskaran and Varma (*Journal of the Indian Medical Association*, vol. 30, Jan. 1, 1958) studied the action of chlorpromazine in 110 patients hospitalized with schizophrenia, manic reaction, acute catatonic excitement, schizo-affective psychosis, manic-depressive psychosis, postencephalitic behavior disorder, mental deficiency with behavior disorder.

senile and/or arteriosclerotic psychosis, and epilepsy with behavior disorder. In most of the schizophrenic patients insulin coma and/or electroconvulsive therapy had been tried without satisfactory results. Of 63 patients with chronic catatonic schizophrenia and unclassified schizophrenia, 19 had had transorbital leukotomy, prefrontal leukotomy, or both without benefit. The duration of symptoms in chronic cases was between 3 and 21 years. Most patients received the drug orally in the form of 25-mg. tablets given three times a day, and the dose was gradually increased to 300 mg. a day, the duration of treatment in most cases being 90 days. When oral medication was not possible the drug was given intramuscularly.

The most satisfactory clinical response was seen in patients with manic reaction, acute catatonic excitement, schizo-affective psychosis, involutional agitated depression, and paranoid schizophrenia, in that order. Of the 58 patients with unclassified schizophrenia, 41 showed no appreciable improvement. Most of these patients, however, had a duration of illness of about seven years and a poor prognosis. Seven who had improved showed signs of relapse. The side-effects and complications encountered during therapy included transitory tachycardia, cardiac arrhythmia, hyperpyrexia, transitory parkinsonian syndrome, rash, gastrointestinal disturbances, jaundice, granulocytopenia or neutropenia, and epileptiform fits. The drug was of little use in chronic schizophrenia characterized by apathy, thinking disorder, or paranoid ideation with little or no attempt to reestablish relationship with the world of reality. Although the mode of action of this drug is not perfectly understood, it has been noticed that the maximum clinical response is shown by those patients whose contact with the world of reality and social stimuli is preserved in some degree.

Blood Glutathione Levels.—Lal and Kumar (*Indian Journal of Medical Research*, vol. 46, January, 1958) studied the blood glutathione levels in 26 diabetic patients and 94 normal healthy controls. The investigations included estimations of blood glutathione, both reduced (GSH) and oxidized (GSSG), and blood sugar. The values for GSH and total glutathione (GSH+GSSG) were appreciably lower in the diabetics. In the normal controls the blood GSH values ranged between 24.5 and 46.1 mg. per 100 cc. of blood; GSSG values between 1.8 and 18.4; and total glutathione between 28.8 and 53.7. The GSH/GSSG ratio ranged between 1.8 and 17.7. Values for blood sugar in the controls ranged from 70 to 100 mg. per 100 cc. Statistically, GSH was seen to bear a significant negative correlation with blood sugar in normal persons indicating that normally a high content of blood sugar generally reflects a lower blood GSH level. No such relation was seen between blood sugar and blood GSSG or with total glutathione. The diabetics did not show any significant correlation between blood sugar and blood GSH, GSSG, or total glutathione. Glutathione probably plays a protective role in the pathogenesis of diabetes.

Experimental Peptic Ulcer.—Zaidi and Mukerji (*Indian Journal of Medical Research*, vol. 46, January, 1958) stated that the importance of mucous secretion as a presponse of the gastric mucosa to trauma has long been recognized, but the significance of a mucous barrier as a defense mechanism in relationship to peptic ulceration had not been investigated. They studied the relationship of mucus to experimental peptic ulceration. Acute peptic ulceration was produced within a period of four hours with massive doses of histamine in guinea pigs. The animals were protected against the toxic effects of histamine by giving them promethazine. The damage to the gastric mucosa varied from erosion to perforation accompanied by congestion and edema of the mucosa. The degree of ulceration was related to the amount of free acid in the gastric secretion. The authors suggested that hyperacidity and edema of the mucosa were the causative factors in the production of the ulcers. Mucus was then produced by using capsicum as an irritant. The greater the amount of mucus produced, the less the degree of ulceration. The mucus also protected the mucosa and submucosa against inflammatory reaction. The free acidity was inversely proportional to the amount of mucin. Mucin probably neutralized the acid of the gastric juice, adhered to the surface of the mucosa and formed a barrier against peptic ulceration. No mucosal hemorrhage or ulceration was produced in the gastric mucosa by giving capsicum in small doses, the most important response being the production of massive amounts of mucus.

NEW ZEALAND

Comparison of European and Maori Immunity to Poliomyelitis.—At the winter meeting of the Otago Medical School Research Society, Dr. J. E. Caughey and co-workers (abstracted in *Proc. Univ. Otago M. School* 35:27, 1957) reported that the incidence of clinical poliomyelitis and the distribution in age groups had been examined in an attempt to assess the immunity in a Maori population before vaccination. Serums from 130 Maoris in the Rotorua area were examined for neutralizing antibodies. These serums were obtained from grammar school and high school children and from a group of sawmill employees. The ages ranged from 5 to 30 years. The incidence of reported cases of poliomyelitis and the mortality rate among Maoris are similar to those among Europeans. The distribution in age groups followed the European pattern and conformed to those found in other countries with a high incidence of the disease. The infant death rate is high among the Maori, and in view of the experience in other countries it might have been expected that the incidence of clinical poliomyelitis would have been low.

Of the serums tested, 70.3% showed positive antibody levels by the mouse protection test. In a previous study on 213 serums from Europeans 55% were positive. The degree of immunity among the Maori appeared to be higher than that of the Europeans. Only 0.8% of the Maoris showed no protection compared with about 20% of the Europeans. Furthermore 42.3% of the Maoris showed protection to all virus strains as compared with 17% in one European group and 2% in another. It was concluded that although the incidence and death rates for poliomyelitis among the Maoris were similar to those in Europeans, serologic study indicates that the former have a higher level of immunity.

Innervation of the Mammalian Gut.—At the same meeting Dr. G. Schofield (abstracted *Proc. Univ. Otago M. School* 35:29, 1957) reported that the mucosa of those parts of the alimentary tract that contain a ganglionated submucous plexus is innervated by two sets of afferent nerve fibers. One consists of the mucosal processes of enteric neurons and is intrinsic to the gut, and the other consists of the mucosal arborizations of spinal ganglion cells and is thus extrinsic in origin. During their course in the intestinal wall, some of the extrinsic afferent fibers also give rise to fine intraganglionic branches which terminate in relation to enteric neurons. There are, therefore, at least three possible afferent neural pathways by means of which nerve impulses arising in the mucosa may reach motor enteric neurons and thus incite reflex activity in enteric glands or musculature: (1) an intrinsic pathway involving afferent enteric neurons; (2) an extrinsic pathway involving neurons of the spinal ganglia; and (3) a pathway formed by the intramural portion only of the extrinsic neurons and involving both the mucosal and the intraganglionic branches in an axon reflex. Recent studies on the peristaltic reflex indicate that, while this reflex depends on the integrity of mucosal nerve fibers, only the intrinsic afferent pathway is necessary for the transmission of nerve impulses from the mucosa to the enteric neurons that innervate the intestinal musculature.

Renal Ischemia in the Rat.—At the same meeting Dr. J. V. Hodge (abstracted *Proc. Univ. Otago M. School* 35:30, 1957) stated that although the mechanism by which the hypertension of renal ischemia is maintained has yet to be satisfactorily explained, a predominant part is played by a humoral agent from the kidney in the period immediately after induction of ischemia, especially if this is severe. Several workers have suggested that the hypertension so induced is ultimately maintained by a nonrenal factor. Evidence in favor of this theory is that late removal of a sole remaining ischemic kidney does not restore the blood pressure to normal; nor does it abolish the increased vascular reactivity of experimental renal hypertension. It seemed possible that the changes responsible for maintaining the elevated blood pressure are themselves brought about by the initial hypertension. If this were so, control of the blood pressure after induction of renal ischemia should prevent the occurrence of a later rise in blood pressure.

The present study was designed to test this hypothesis. The method of investigation consisted of performing nephrectomy on adult rats, followed by the application of a silver clip to the other renal artery. Half of the group was treated with reserpine from the time of clipping, the remainder being allowed to develop hypertension. At 6 and 12 weeks from the time of clipping the blood pressure changes were measured, after the administration of reserpine was discontinued. During its administration reserpine controlled the mean systolic blood pressure, but when its administration was discontinued at 6 and again at 12 weeks the blood pressures rose to hypertensive levels within 8 days. The rate of rise approximated closely that rate which occurred immediately after clipping in the control group. Histological examination showed fewer vascular lesions in the reserpine-treated group than in the untreated group. This study demonstrated that the mechanism responsible for maintaining the blood pressure in the later stages of renal hypertension is independent of the initial rise in blood pressure.

Influence of Serotonin, Vasopressin, and Adrenalectomy on Vascular Reactivity.—At the same meeting Dr. E. G. McQueen (abstracted in *Proc. Univ. Otago M. School* 35:32, 1957) reported on an extension of previous work on the state of increased responsiveness to levarterenol in the blood vessels of the isolated perfused hindquarter of rats with renal or renoprival hypertension. The responsiveness to other pressor agents (serotonin and vasopressin) has now been examined. Earlier experiments demonstrated the importance of the adrenal in the production of the state of increased vascular reactivity in rats with renoprival hypertension. The role of the adrenals in the production of the increased vascular reactivity resulting from renal hypertension has now also been investigated. The response to 4 mcg. of levarterenol was measured in a group of rats with unilateral renal ischemia, the other kidney remaining intact, and was compared with that in a matched control group of rats that had not been operated on. The mean response in the group with renal ischemia was 40.4, and that in the control group 29.0 mm. Hg. The response to other pressor agents was measured in groups of rats with ischemic sole remaining kidneys and was compared with that in matched control groups of unilaterally nephrectomized rats. The mean response to 10 mcg. of serotonin in the group with renal ischemia was 42.6 and that in the control group 20.2 mm. Hg. The mean response to 0.02 unit of vasopressin in the group with renal ischemia was 12.9 and that in the control group was 8.9 mm. Hg.

The importance of adrenals in the production of a state of increased reactivity in animals with experimental renal hypertension was shown in the following experiment: unilateral nephrectomy and unilateral adrenalectomy were performed as a preliminary procedure. Control animals had no further operation and the remainder had either application of a constricting clip to the artery of the sole remaining kidney or application of the clip together with removal of the remaining adrenal. Reactivity was estimated at from three to five days after operation, with the following results: control 23.4, renal ischemia 34.5, and renal ischemia plus adrenalectomy 24.6 mm. Hg. The results indicated that experimental renal hypertension is characterized by a state of increased vascular responsiveness to pressor substances of widely differing chemical constitution. As previously shown with renoprival hypertension, the development of increased vascular reactivity in renal hypertension appears to depend on activity of the adrenals.

TURKEY

Expansion of Health Facilities.—An eight-story 400-bed general hospital and a 300-bed nurses' home and training school for 212 nurses and technical assistants was recently opened in Ankara. The Minister of Health and Social Assistance announced that in the past eight years 23,730 new hospital beds have been provided, bringing the total for the country up to 31,396. In 1949 there were 16 health centers, and now there are 216. To the two schools for midwives in rural communities, eight have been added. The hospital equipment and installations of the new hospital are modern and include a garbage incinerator, the first in any Turkish hospital.

Poliomyelitis.—At a meeting of the Turkish Pediatric Society in Istanbul, Prof. B. Tumay reported a sharp increase in the incidence of poliomyelitis. In 1950 there were 12 cases and in 1956, 363. Of these, 186 occurred in Istanbul and its environs, 65 in Izmir, and 55 in Ankara. The disease was sporadic throughout Anatolia. In 334 cases (92%) the patients were in the age group 0 to 5 years. The infant death rate is still high in the mountainous regions and inaccessible villages of eastern Turkey where accurate reports on the cause of death are not available. So presumably the incidence of poliomyelitis is even higher than these figures indicate.

Health Insurance.—The Workers' Health Insurance law concerning establishments employing more than five persons came into force in March. It covers occupational accidents and diseases, hospitalization, maternity benefits, pensions for widows and orphans, and disability payments. The law provides for allowance of traveling and maintenance expenses abroad including the person accompanying the patient in exceptional cases where treatment, partial or complete, cannot be procured within the country. Insurance agency statistics indicate that 32,971 occupational accidents have been reported. Of these, 30,785 persons received treatment. As a result of 341 fatal accidents, pensions were granted to widows and orphans and 1,028 persons received monthly disability payments. It is estimated that during the year over a million persons will have a physical examination by physicians of the health insurance agency and a further 224,000 by physicians of cooperating hospitals. The Istanbul unit has 1,661 beds in 56 hospitals and one dental clinic. The agency has a 560-bed hospital under construction at Samatya, a suburb of Istanbul.

Physicians in Armed Services.—This year the Gulhane Medical Military Academy reported the largest number of graduates since it was founded in 1927. The graduating class of 1957 included 103 army, navy, and air force physicians who had taken postgraduate courses in 15 branches and received specialist diplomas. Because service doctors often retire from active duty soon after completion of their compulsory service, a bill was introduced into the National Assembly to ensure frequent promotion and higher retired pay.

UNITED KINGDOM

The Common Cold.—At a meeting of the Royal Society of Medicine in January, Dr . R. E. H. Simpson said that each winter there is a great upsurge of mild, acute, but unspecified respiratory disease in the population, loosely labeled as the common cold, and that there are problems still unsolved relating to its cause, prevention, and control. In Cirencester for the past five years 350 volunteers have kept records of their morbidity from colds. On an average each had had seven colds a year, with an annual morbidity of 70 days. Almost 20% of our lives is spent coughing and sneezing. There appears to be a close correlation between colds and the dryness of the air. As an example it was found that in a cheese factory in Wales workers in a cold and humid room had only half as many colds as did their colleagues in other parts of the factory. At the common cold research unit at Harvard Hospital, Salisbury, it was shown among thousands of volunteers that there was a close correlation between the amount of nasal discharge and the other symptoms.

Describing experiments in human volunteers, Dr. Roden of the Ministry of Health said that infected material from known coryza victims had been instilled pernasally in 198 subjects. Only one of 209 controls developed a cold, compared with 73 of the 198 subjects inoculated with infected material. In the discussion that followed speakers quoted "facts" such as that the elderly were relatively insusceptible to colds, that isolated communities were apparently free from colds, and that colds were family illnesses. Dr. Simpson shattered many illusions by referring to his figures, which showed that the elderly were just as susceptible to colds as were younger persons, that sailors in isolated weather ships had just as many colds on board when not in contact with the outside world as when on shore, and that there was no evidence that colds were family illnesses that spread from one member to the next.

Water Supply.—According to a comment in *Lancet* of Feb. 1 the British system of water supply has been built up piecemeal by local initiative and now includes 1,250 water treatment plants. The Metropolitan Water Board of London and those of Birmingham, Manchester, and Liverpool supply nearly 25% of the population of England and Wales. At the other extreme some plants supply only a few thousand people. The total rainfall in Great Britain is, on average, about 130 billion gallons a day. About half of this evaporates or enters the ground. Some must be left in rivers to provide a minimum flow, some may not be capable of economic development, and some may be polluted. At present the public supply system makes available about 2.5 billion gallons a day, of which about 1.6 billion gallons is taken by domestic and commercial users and about 900 million gallons by industry and agriculture. In addition industry uses amounts far exceeding those obtained from public supplies; probably, in all, 2.5 to 3 billion gallons a day is consumed and well over 20 billion gallons a day used. The water industry has increased gross capital expenditure from an average of 48 million dollars in 1948-1949 to an average of 110 million dollars in 1955-1956, but if the demand for water continues to increase, further investment will be necessary if shortages in public supplies are to be avoided.

Hospital Saturday Fund.—A private enterprise known as the Hospital Saturday Fund still functions in the Welfare State of England (*Brit. M. J.*, Jan. 25, 1958). Apparently in 1873 20,000 people at a mass meeting at Hyde Park Corner unanimously agreed to ask the workers of London to pay a penny a week to a hospital fund, in return for which the hospitals would treat them without question. Saturday being pay day, the new organization was known as the Hospital Saturday Scheme. In 1948, when the National Health Service came in, this nonprofit voluntary organization decided to continue, and now 1,100 checks a week leave the central office in payment of benefits under the "A" scheme, by which 425,000 members and dependents obtain medical benefits for a contribution of $2 a year. Now a new "B" scheme has been started, under which for an annual payment of $11 persons will receive a weekly check while in hospital whether in a paybed or not. The secretary of the fund said it was finding increasing support in the Midlands and south of England and particularly in the home counties. Since 1948 $2,500,000 has been paid to members. The main object of the new scheme, which will not supersede the "A" scheme, is to ease the burden of the member while he is in the hospital. A weekly check will be paid to him whether he is receiving treatment under the National Health Service or privately. Remarking that one of the criticisms of the National Health Service was the overcrowded nature of outpatient departments, the secretary said: "We strongly advise people who belong to the scheme to get private consultation, and then if beds are available to get a National Health Service bed."

Uncontrolled Immigration.—Two recent reports have drawn attention to the potential dangers of the fact that there is no compulsory medical examination for immigrants to this country from British possessions overseas. G. Z. Brett (*Tubercle* 39:24, 1958) analyzed the 1956 records of the mass radiography service of the North West Metropolitan Hospital Board, whose area includes fairly large communities of Irish, Cyprian, and West Indian immigrants. The incidence of active tuberculosis among men was 5.7 per 1,000 among those born in the United Kingdom, 42 per 1,000 among Irish immigrants, 16 per 1,000 among Cyprian immigrants, and 4 per 1,000 among West Indian immigrants. The corresponding figures for women were: 2.4, 13, 7, and nil. The total number examined were: 27,655 born in the United Kingdom, 1,801 Irish, 475 Cyprians, and 978 West Indians. It was concluded that in the face of a declining tuberculosis morbidity in Great Britain, the high incidence of active infectious disease in Irish-born residents in Britain, and to a lesser extent in Cyprian-born residents, is of epidemiologic importance.

The other report comes from the Metropolitan Water Board. The routine examination of waterworks employees for the detection of carriers of waterborne diseases has been part of the policy of the board since 1937. Hitherto, investigation has been mainly concentrated on the search for bacterial infections. The recent influx of workers from tropical countries, however, has led to a reconsideration of this policy, because such employees often harbor transmissible protozoal or metazoal infestations. It was therefore decided that stool specimens should be examined microscopically, in addition to the normal cultural methods, in the case of all workers from abroad. Such examination of the first 21 colored workers, according to R. D. MacLean (*M. Officer* 99:61, 1958), revealed Ascaris lumbricoides ova in 8, Ancylostoma duodenale ova in 6, Trichuris trichiura ova in 5, Entamoeba coli cysts in 3, Entamoeba histolytica cysts in 1, Giardia lamblia cysts in 1, and Iodamoeba bütschlii cysts in 1. Infection was often multiple, and in only seven of those examined were the findings negative. Of the 14 infected, 13 came from Jamaica and 1 from Antigua. They had been in this country for periods ranging from a few weeks to five years. None of those examined had any complaints. In drawing the attention of medical officers of food and water works concerns to these findings, it was noted that the risk could not be assessed, as it depended on the hygienic habits of the infected employee. It is nevertheless present and a factor to be borne in mind. It is also worth considering whether the very fact that a man is infected does not point to an obliviousness of the most elementary rules of hygiene in his home surroundings.

Penicillin Dermatitis.—Two cases of allergic dermatitis due to penicillin in milk from cows treated for mastitis were reported by H. R. Vickers and co-workers (*Lancet* 1:351, 1958). One patient was a woman, aged 55, who had a history of skin trouble dating from eczema in infancy. She had lived on farms for many years. In 1956, when she had her own cow, which had not had penicillin, she was well, but when the cow stopped lactating and she drank fresh bulked milk, probably containing penicillin, she had a relapse. Her previous attacks had been associated with drinking about a liter of fresh bulked farm milk daily. She improved when away from the farm. Analysis of fresh milk from the farm where she lived showed a penicillin content of 4 units per milliliter. She gave strongly positive reactions to penicillin, primula, and nickel sulfate. A course of penicillin desensitization was finally successful; she tolerated 1 mega-unit, and the dermatitis cleared. The other patient was a man, aged 44, who had a small farm, with 14 cows that were milked by machine. He had started to treat one of his cows with penicillin 10 days prior to the onset of his dermatitis. Milk from this cow was added to the rest of the farm milk, which he had been drinking. Five days later he developed a severe dermatitis involving the whole skin. Patch tests were positive to procaine penicillin. On account of the severity of the reaction, he was treated with prednisolone. It is recommended that this country should adopt the American ruling prohibiting the distribution of milk for 72 hours after treatment of a cow with penicillin.

Wound Infection in Hospital.—For a three-month period, October-December 1956, all operative and accidental wounds in four surgical wards of the Edinburgh Royal Infirmary were carefully followed. An analysis of the findings by Jeffrey and Sklaroff (*Lancet* 1:365, 1958) showed that of 708 operative wounds, 4.9% were already seriously infected at operation and remained so; 60.5% were regarded as absolutely clean; and 34.6% as potentially infected. Of the 673 clean wounds, 26.1% were found to be infected at some time after operation. In 16.3% the infection was trivial, in 7.7% it was moderate, and in 2.1% it was severe. The general incidence of serious wound infection, a combination of these last two percentages, was therefore 9.8%. The incidence of serious infection was lowest in the orthopedic ward (1.6%), higher in the neurosurgical ward (5.5%), and highest (13.8%) in the two general surgical wards. In the potentially infected clean wounds the incidence of serious infection was 19.2%. In the other clean wounds the incidence was only 4.5%. In all four wards infection was more common in the potentially infected wounds.

Most of these infections were thought to originate in the operating room. An important factor was the type of work done in the general surgical wards, and their abnormally high infection rate was attributed to the fact that this work included emergency and accident cases. There are six general surgery wards in the Royal Infirmary, each with its own operating room, and on one day a week in rotation each ward admits emergencies from a population of about a million. As there is no accident service, not only abdominal emergencies but also traffic accidents and fractures have to be admitted. Accidental wounds are not particularly infectious, but an ischiorectal abscess or a ruptured appendix is likely to infect other patients. When the ward is busy with such cases strict aseptic techniques sometimes suffer.

A New Society.—The Association for Child Psychology and Psychiatry was founded recently in London. Its objects are the scientific study of all matters concerning the mental health and development of children through the medium of meetings and the establishment of a journal. Membership is open to qualified child psychologists, pediatricians, child psychiatrists, child psychoanalysts, child psychotherapists, social workers, and professionally qualified persons in related fields. The association plans to affiliate to the International Association for Child Psychiatry and Allied Professions.

CORRESPONDENCE

DIAGNOSIS OF HYPERTHYROIDISM

To the Editor:—I have read with great satisfaction Dr. Jackson's paper on "False Diagnosis Of Hyperthyroidism" in THE JOURNAL, Nov. 23, 1957, page 1533, finding myself in full agreement with the views and conclusions expressed therein. My personal experience covers a period of about 20 years in Germany and of almost 25 years in the Middle East, particularly in Israel. While genuine exophthalmic goiter was comparatively frequent on the European continent, only isolated cases have been seen in Israel, and these are almost exclusively found among the western Jews. I have also found that thyrotoxicosis (hyperthyroidism without conspicious goiter and eye signs) is not as frequent as generally assumed and diagnosed. As Dr. Jackson, I have seen many patients, especially women, in whom a diagnosis of thyrotoxicosis had been confidently made by the attending physician on the strength of nervous excitability, palpitation, profuse sweating, other neurovegetative symptoms and signs, and an elevated BMR, without account being taken of the fact that all these manifestations are not pathognomonic of thyroid hyperfunction. Similarly, an elevated radioactive iodine uptake is frequently regarded as final diagnostic proof. However, increased iodine collection does not, in all circumstances, imply increased hormone synthesis, as has been learned from the functional conditions found in iodine deficiency after the withdrawal of certain antithyroid drugs, etc. On the other hand, there are clinical criteria which do not require elaborate laboratory facilities and which I have found very valuable in the differentiation of genuine hyperthyroidism from extrathyroidal syndromes. Criteria which favor hypothyroid rather than hyperthyroid disease are weight gain, vasospastic phenomena, cold and clammy extremities, constipation, cold intolerance, and often a marked instability of the pulse rate, blood pressure, and basal metabolic rate. In the presence of these criteria a diagnosis of hyperthyroidism should be made only with caution, and specific therapy should be withheld until there has been an evaluation of the effect of unspecific therapeutic procedures—among which use of reserpine and quinine have been found to be particularly effective. It is certainly more advantageous for a patient to be submitted first to such a harmless therapeutic regimen—even if it should fail to ameliorate his condition—than to be treated at once and without justification by antithyroid drugs, radioactive iodine, or surgery, which, besides being as a rule ineffective in extrathyroidal syndromes, may give rise to unpleasant complications such as myxedema, malignant exophthalmos, and blood diseases.

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FIVE-YEAR CANCER CURE

To the Editor:—The authors of the article "Five-Year Cure Rates of Clinically Occult and Suspected Uterine Carcinomas: A Community Cancer Detection Program" in THE JOURNAL, Feb. 8, 1958, page 568, present some rather interesting statistics which are misinterpreted. They report 49 clinically occult in situ cervical carcinomas in patients of an average age of 40.5 years and 12 clinically suspected cervical in situ carcinomas in patients of an average age of 40.2 years, together with 10 clinically occult late invasive cervical carcinomas in women of an average age of 49.7 years and 84 clinically suspected late invasive cervical carcinomas in women of an average age of 52.2 years, all of these discovered in a cancer detection program in and around Toledo, Ohio. The authors draw the conclusions that "carcinomas of the cervix not only may be discovered earlier by cytological than by other methods but also that when they are so discovered better cure rates can be obtained." They base this conclusion on the five-year end-results, which are very strongly weighted by the fact that there were no deaths in five years in the patients with in situ carcinomas.

Actually, their own statistics strongly imply that it takes an average of from somewhere between 9 and 12 years for in situ carcinoma to reach the stage of being "late invasive" in the natural course of human events without any detection or treatment whatsoever, since this age difference existed in the populations found. Inasmuch as *in situ* carcinoma cannot possibly become fatal without progressing to an invasive stage, the results at the end of five years are meaningless when applied to cases of in situ carcinoma.

Any program of "early detection" is certain to improve "five-year cure rates" for the simple reason that discovering cancer one year earlier than usual gives the patient one year longer to live, whether the treatment is of any value whatsoever or not. Discovering cases of cancer 10 years earlier than usual should obviously give 100% five-year cure rates, with or without treatment.

All this does not mean that cancer detection programs are not worth while—I am of the opinion they probably have some value—but some different method of determining results than "five-year cures" must be adopted, such as comparison with normal mortality figures for the general population, longitudinal study by cohorts, etc.

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LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Malpractice: Negligent Use of Cast Cutter.—This was an action for damages sustained by an 11-year-old girl as a result of the alleged negligent operation of a cast cutter by the defendant physician. From a judgment in the trial court in favor of the patient, the physician appealed to the Supreme Court of Errors of Connecticut.

The plaintiff fractured her right leg. The defendant, her family physician, set the leg and applied a plaster cast extending from above the knee to the toes. When it came time to remove the cast, the defendant used an electric oscillating cast cutter and in doing so he lacerated the plaintiff's leg in three places. The first was just below the kneecap, extending 1.13 in. along the midline. The second and more serious wound was about 6 in. in length along the midline of the shin, exposing the bone and cutting into the periosteum. It left a scar 0.63 in. wide at the upper third and a 1.50 in. wide in the middle, tapering down to 0.75 in. It is irregular, permanent, and visible. The third laceration was about 1 in. long on the upper aspect of the foot between the second and third metatarsal bones. The plaintiff complained that he was hurting her when the cutter reached the area of the first laceration. The defendant continued to cut the cast, however, and the plaintiff increased her complaints of pain and cried throughout the one-half-hour operation. When the cast was removed, it was bloody. The wound was open and messy and contained pieces of plaster of Paris from the cast and cotton from the padding that had been used to protect the leg and keep the cast from touching the skin. The defendant used 14 sutures in the two lower wounds. The leg became swollen, inflamed, and red; an infection developed, and the wound completely broke down, requiring removal of the sutures.

The plaintiff did not, in accordance with the generally accepted manner of proving malpractice, offer any testimony by an expert medical witness categorically stating that in his opinion the operation of the cast cutter by the defendant was negligent or unskilled. However there was, said the Supreme Court of Errors, expert testimony from which the jury could have found the defendant negligent. In the first place, the defendant himself admitted upon cross examination, after some hedging, that the cutter, properly used, should not have caused the lacerations. In addition, the doctor who treated the wounds after the plaintiff had been removed from the defendant's care, testified that the cutter, used with the care, skill, and diligence which physicians in the same general neighborhood and in the same general line of practice ordinarily possess and exercise in similar cases, should not cut the skin. This was sufficient, concluded the Supreme Court of Errors, to support a verdict for the plaintiff. The court was also of the opinion that the damages awarded, in the sum of $20,000, were not excessive in view of the scarring, the age of the plaintiff, the amount of suffering, etc.

The judgment in favor of the patient was therefore affirmed. *Allen v. Giuliano,* 135 A(2) 904 (Conn. 1957).

MEDICAL FILM REVIEWS

NEW FILM ADDED TO A. M. A. MOTION PICTURE LIBRARY

Ovulation and Egg Transport in the Rat: 16 mm., color, sound, showing time 15 minutes. Prepared in 1957 by Richard J. Blandau, M.D., University of Washington, Seattle. Procurable on loan (service charge $2.00) from Motion Picture Library, American Medical Association, 535 N. Dearborn St., Chicago 10.

This film shows ovulation and tubal transport in the living rat. In the first part of the film, numerous examples of ovulation with extrusion of the egg from the follicle in about 72 seconds are shown. In the second part of the film, the eggs, stained intravitally, are shown going into the external end of the fallopian tube. If any criticism at all could be leveled at this production, it is that the ovulation part is perhaps somewhat repetitious, but it certainly is not so repetitious as to be boring. It is undoubtedly a magnificent film. The narration is remarkably good. The photography is extraordinary, and the story is told simply and effectively. Actually, the cinematic quality of this film is such that it excites the viewer and builds him up to the climax, which is the introduction of the stained eggs into the fallopian tube. This film is recommended for any scientific or medical group, including medical students, who might be interested in how the egg is produced and gets into the fallopian tube.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Bacterial Endocarditis: Survey of Patients Treated Between 1945 and 1956. A. E. Dormer. Brit. M. J. 1:63-69 (Jan. 11) 1958 [London].

The author reports on 58 male and 24 female patients with bacterial endocarditis who were treated at St. Bartholomew's Hospital in London between 1945 and 1956, i. e., during the period in which antibiotics were freely available. The administration of crystalline penicillin by intramuscular injection at 3-hour intervals, up to a total daily dose of 2 million units for 6 weeks, was practiced. Even on this regimen 1 patient with a sensitive green-producing streptococcic infection failed to respond until the daily dose was raised to 4.8 million units. Since 1953 there has been a tendency to use larger doses at greater intervals, the commonest regimen being that of 1 million units every 6 hours. This has been adequate for most patients, but 2 required 3 million units every 6 hours. Penicillin and streptomycin proved to be the most useful combination for the resistant organisms. Fifteen out of 51 bacteriologically positive patients treated since 1946 failed to survive the treatment, an immediate mortality rate of 29%. Seven additional patients died within 2 years after the treatment of causes attributable to their infection, making a total early and late mortality rate of 43%. Six patients died of other causes, and the remaining 23 patients survived their first attack for 1 to 11 years. There was considerable delay in correct diagnosis; an erroneous initial diagnosis of rheumatic fever was made in 2 patients and of influenza in 5. Old age, gross purpura, and short courses of antibiotics for unexplained fever were further causes of delay.

Eleven patients gave a history which strongly suggested that extraction of infected teeth without antibiotic cover was the precipitating factor. Two patients were infected after dental extractions under penicillin cover. Only 1 edentulous patient was infected with green-producing streptococci which proved to be highly resistant. He had an infected ulcer in the mouth, caused by the abrasive effect of ill-fitting dentures, and it was thought possible that his infection had resulted from this. A much higher standard of observation and of dental care should be instituted. Dentists should ask simple questions regarding heart disease and rheumatic fever before extracting teeth; all patients known to be a risk should have regular and close dental care; adequate examination of patients not often seen should involve x-ray examination of the teeth; all extractions in susceptible patients should be performed under antibiotic cover; after such extractions, and because antibiotic cover does not always prevent infection, patients should specifically be warned to report early, should untoward symptoms arise. Relapse of infection was observed in 15 of the 82 patients, a recurrence rate of about 18%. The disease has its greatest mortality, and is more often missed, among patients of more advanced age.

The Natural History of Ventricular Septal Defect. L. Brotmacher and M. Campbell. Brit. Heart J. 20:97-116 (Jan.) 1958 [London].

This paper is based on the cases of 75 patients in whom the diagnosis of ventricular septal defect was accepted after cardiac catheterization, regardless of whether the patient was cyanotic or acyanotic. Another 100 patients in whom the diagnosis rested on clinical grounds alone have been considered with regard to age and sex incidences. Nearly three-quarters of all the patients were under 20 years of age, but the cyanotic patients were more equally distributed through the first four decades, showing that patients become cyanotic throughout this period. Although the sex incidence was equal, there were far more women than men over 20, and among the cyanotic patients the female patients were older than the male. The prognosis in boys and men, therefore, appears to be more serious than in girls and women. The 75 patients with ventricular septal defects have been classified in the following 5 groups: Group 1 included 9 patients with small defects and with a small left-to-right shunt only (up to 3 or perhaps 3.5 liters a minute). Group 2 included 6 patients with larger defects and with a left-to-right shunt of 4 to 15 liters a minute, still with a normal pulmonary arterial pressure. Group 3 included 21 patients with larger defects, with pulmonary hypertension that was hyperkinetic, with a left-to-right shunt only. The 12 patients in group 4 had larger

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The place of publication of the periodicals appears in brackets preceding each abstract.

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defects, still with a left-to-right shunt only, and with pulmonary hypertension due to increased pulmonary arteriolar resistance (above 3 units). The 27 patients of group 5 had larger defects, with a right-to-left shunt also. Here the aorta was functionally overriding; it may always have been anatomically overriding or may have become so.

This classification presents to some extent the stage that has been reached rather than a permanent division. Patients in group 1 and possibly those in group 2 remain there, and some in groups 4 and 5 may always have been there, but with the passing of time patients in groups 3 and 4 tend to pass into group 5. Patients with maladie de Roger (group 1) and with Eisenmenger's complex (group 5) are at the 2 ends of a continuous series of cases of ventricular septal defect. The authors think that the terms "maladie de Roger" and "Eisenmenger's complex" should no longer be used, and still less the term "Eisenmenger's syndrome" which adds confusion instead of clarity. Classification should depend on the size and direction of the shunt and on the level of the pulmonary arterial resistance. In acyanotic patients the heart will be large if the shunt is large. In cyanotic patients it may be large or it may be normal in size when the left-to-right shunt has never been large or has ceased to be so because of the high pulmonary arterial pressure. Pulmonary regurgitation is found in one-third of the patients with pulmonary hypertension. If the patient survives infancy, the prognosis is fairly good for 15 years or so; but unless the defect and the shunt are small, it becomes increasingly bad thereafter, and few such patients survive to 40 years of age. In ventricular, as opposed to atrial, septal defects, the pressure may be transmitted directly from the left to the right ventricle. The pressure differential between the ventricles will be normal if the defect is small, in which case the shunt is generally less than 3.5 liters a minute, although sometimes it is much larger, presumably with a defect of intermediate size. Generally, however, the defect is larger and the pressure differential is small, no more than 10 or 20 mm.; this enables the heart to maintain a reasonable systemic flow in spite of the large shunt.

The right ventricular and pulmonary arterial pressures are already high in small children, probably from birth. Although at first the rise is generally hyperkinetic, subsequently it is due partly to the natural rise in left ventricular pressure but mainly to the pulmonary arteriolar resistance, which increases with age and becomes the most important factor. At some stage, often in the third decade, the right ventricular pressure may rise faster than the left, so that the left-to-right shunt becomes much smaller, a right-to-left shunt develops, and the patient becomes cyanotic. These changes are accounted for by the levels of the right and left ventricular pressures, and there is no need to invoke any pulmonary factor to explain the cyanosis or to place much importance on the anatomic position of the aorta. The authors are in agreement with Selzer (1953) and Blount (1955) in treating the acyanotic and cyanotic patients as a single group. The exact stage at which these changes make successful operation for closing the ventricular septal defect impossible will need precise definition, but it may be relatively early.

Treatment of Mumps Orchitis with ACTH and Cortisone. I. M. Smith and J. W. Bishir. New England J. Med. 258:120-124 (Jan. 16) 1958 [Boston].

Orchitis has been observed to complicate mumps in from 15 to 40% of adult males in different epidemics. The pain of orchitis appears to be related to acute distention of the testis within the rigid tunica albuginea, and relief can be obtained by surgical incision of this capsule. The administration of cortisone and corticotropin has been tried by a number of investigators in the hope that they might be as effective as surgery. The records of 95 patients with mumps orchitis were examined, and the effect of the treatment was assessed by observation of the duration of fever, swelling, pain, and hospital stay from the onset of therapy. A discharge physical examination record was available in the majority of cases. The cases were divided into 3 groups according to treatment, whether it was symptomatic treatment or treatment with corticotropin or cortisone. Symptomatic treatment consisted of bed rest with support of the scrotum on an adhesive-tape bandage between the thighs. Ice bags were applied as seemed to be indicated for pain. Acetylsalicylic acid was usually given when the temperature was above 101 or 102 F. There were 34 patients in the group receiving symptomatic treatment. This treatment was also provided for the other 2 groups in addition to the specific therapy mentioned. Corticotropin treatment was given to 20 patients. Eight patients received a single dose of corticotropin, 25 mg., by intravenous infusion; five had the same treatment on 2 or 3 successive days; a further 7 patients were given the hormone intramuscularly in divided doses totaling 50 to 500 mg. Cortisone treatment was given orally in doses of 50 to 100 mg. to 31 patients.

A strong clinical impression was formed that cortisone was beneficial in diminishing pain and swelling of the testis. Analysis of the records of 34 untreated and 31 treated patients showed that oral treatment with cortisone reduced the duration of testicular pain. This reduction in the duration of pain was statistically significant. The duration of swelling of the testis, of fever, and of hospital stay was not different in the treated patients and in the controls. Cortisone does not prevent the onset of orchitis. Inadequate treatment with cortisone will result in a relapse noted by a return of testicular pain and fever. A course of treatment for severe cases of orchitis consists of the administration of at least 300 mg. of cortisone by mouth daily over a 4-day period. Patients with concurrent arthritis and pancreatitis responded adequately to cortisone treatment. Such treatment with hormones was complicated by an unusual number of infections, as compared with the controls, and it is debatable whether the analgesia obtained was worth the infection incurred.

Cytologic Patterns in Bronchopulmonary Disease. A. A. Carabelli. Am. Rev. Tuberc. 77:22-31 (Jan.) 1958 [New York].

These studies were concerned with determining whether there existed pathognomonic patterns in the cytological exudates and exfoliates of the various bronchopulmonary diseases which might be characteristic from a diagnostic point of view. Special emphasis was placed on cell types and patterns exclusive of bacteriological or mycologic findings. It was thought that, since much information had been gathered on the neoplastic diseases of the lung by such study, perhaps similar information could be applied to the diagnosis of other types of bronchopulmonary diseases. The source material for this study consisted of specimens collected endoscopically from 1,000 patients with some manifestation of bronchopulmonary disease. All were followed up, especially the doubtful cases, for a period of 6 years. Many "normal" cases were encountered, but these were included for the purpose of comparison and to study normal variants. This study revealed 3 large categories of bronchopulmonary diseases which may be said to have a characteristic cytogram: acute or chronic suppurative bronchopneumonitis, with leukocytes prominent or predominating; acute or chronic allergic bronchopulmonary disease, with eosinophils present or prominent; and neoplastic bronchopulmonary disease, with malignant cells. The cytogram of acute or chronic suppurative bronchopneumonitis may be superimposed on either the allergic or the neoplastic groups to mask the underlying disease.

During the study of the cellular patterns in the bronchopulmonary suppurative group, clusters of cells sometimes appeared which were strongly suggestive of neoplastic cells of the epidermoid type. Such cells were encountered in patients with no roentgenologic or bronchoscopic evidence of malignancy, and observation over a period of years did not reveal malignancy. These cells were usually large, were closely grouped together, and rarely were seen alone. The cell bodies, although distinguishable, generally fused with each other. They were not of uniform size and took the orangeophilic stain. The nuclei did not have clear-cut outlines and faded into the cytoplasm. Anisokaryolysis was usually present, and nuclear detail was not prominent. The size of the cell varied from 3 to 5 times that of a leukocyte. The cytoplasm did not possess any distinguishing characteristics but was of a fine homogenous granularity. It may well be that these cells represent clusters of ciliated or other benign cells which have undergone metaplasia and, for want of a better name, have been called pseudomalignant groups.

The Role of the Bovine Type of Tubercle Bacillus in Human Tuberculosis and the Portal of Entry. E. Urech. Tuberkulosearzt 11:733-744 (Dec.) 1957 (In German) [Stuttgart, Germany].

The role played by the bovine strain of tubercle bacilli in the causation of human tuberculosis is still a matter of controversy. In the Swiss Canton of Vaud bacteriological examinations of 441 tuberculous patients revealed the bovine type of tubercle bacillus in 20, or 4.5%. This could indicate that the bovine type of tubercle bacillus plays a minor role in the causation of human tuberculosis. Bacteriological studies alone cannot ascertain the role of this type of tubercle bacillus in human tuberculosis. The author comments on the primary tuberculous complexes in the thorax, in the mouth and pharynx, and in the abdomen. The abdominal form is largely inaccessible to histological studies, except that now and then in cases of appendicitis the surgical specimen and the regional lymph nodes reveal evidence of tuberculous infection.

Discussing studies on the portal of entry of the tubercle bacillus, the author hopes that type differentiation with regard to the portal of entry will eventually provide interesting information. It was demonstrated that cultures or animal experiments on guinea pigs are inadequate. It has been suggested that 20% of human tuberculous infections are of bovine origin. Clinicians believe that in the region in which these studies were made 50% of the tuberculous infections occurring in children and adolescents were probably due to the bovine type of tubercle bacillus. The only means for preventing this type of tuberculous infection is the elimination of tuberculosis in cattle.

Late Relapses of the Segmental Infiltration of Primary Tuberculosis. A. F. Riebel. Tuberkulosearzt 11:745-750 (Dec.) 1957 (In German) [Stuttgart, Germany].

The more or less segmentally localized infiltration is characteristic of the primary complex of tuberculosis of the lung. The author investigated patients with such segmental processes for reactivation and found relatively few, since this is a rather benign form of tuberculosis with a relatively favorable prognosis. Thirty-two cases of pulmonary tuberculosis in children and in adolescents are reviewed in which reactivation occurred after latent periods varying from 1 to 13 years. Local recurrences were noted in 9.3% of the cases and hematogenous dissemination in 28.9%. Bronchogenic spread to adjoining segments had occurred in 38.2% and to distal segments in 23.6% of the cases. The average latent period between segmental infiltration and recurrences was 6.2 years for hematogenous dissemination. Bronchogenic dissemination to adjoining segments occurred after an average period of 3.9 years and to distal segments after 4.6 years. The hematogenous disseminations occurred predominantly during puberty. In boys incidences of recurrences were uniformly distributed throughout all age periods, but in girls they increased from the 6th year of life onward and reached their peak during puberty. Recurrences showed no uniform direction of distribution and were sometimes contralateral. Prophylactic measures are of doubtful value, considering that dissemination may originate from the primary focus, from the segmental infiltration, or from the lymph nodes. The prognosis is indefinite, since recurrences have been known to occur as late as 13 years after a latent period.

Exfoliative Cytology: Its Practical Application in the Diagnosis of Gastric Neoplasms. J. R. Ross, J. M. McGrath, R. E. Crozier and R. R. Rohart. Gastroenterology 34:24-33 (Jan.) 1958 [Baltimore].

The authors became interested in exfoliative gastric cytology in 1948, when material for examination was obtained through simple aspirations, through lavage with Ringer's solution, or after alcohol stimulation. Unsatisfactory results led them to abandon these tests, as a practical means of distinguishing between benign and malignant disease. Newer methods have consisted either of the principle of mucosal abrasion or of a mucolytic effect on the gastric mucous membrane, with strikingly improved results. Chief among these methods have been the development of the abrasive balloon, the antral abrasive balloon, the gastric brush, lavage with papain, and lavage with chymotrypsin in a buffered acetate solution. The authors report on gastric cytological study in 252 patients. Because of short and discouraging experiences with the abrasive balloon, simple aspirations, and lavage with Ringer's solution, this report does not include these results for comparison. The first phase of the study, in which 56 patients were investigated, was regarded as a period of exploration with reference to technique and decision regarding preference for the method of examination. The second group of 195 patients included the remaining patients studied. The evolutionary process of selecting and discarding methods of examination continued. No progress has been made in accuracy of results with the brush; lavage techniques seem to be superior to the brush.

The total number of satisfactory procedures performed by the 3 major methods of examination were as follows: brush, 127; chymotrypsin lavage, 63; and isotonic sodium chloride solution, 113. There were 23 unsatisfactory examinations, including 10 with brush, 5 with chymotrypsin lavage, and 8 with isotonic sodium chloride solution, making a total of 326 procedures. In the second group of 195 patients studied, there were 39 in whom gastric cancer was proved at operation; 2 patients with malignant tumors were not operated on. Of those with a benign condition, 23 patients were proved at operation to have had either no gastric pathological condition or a benign gastric lesion. The remaining 131 patients in this group, who were not operated on, had follow-up studies through return appointments and questionnaire letters for periods up to 2½ years. Gastric cytological analysis should be undertaken when the presence of gastric malignancy is doubtful or when there is a possibility of identifying the neoplasm as a lymphoma prior to contemplated operative intervention. There is no advantage in conducting cytological studies routinely when the diagnosis of malignancy can otherwise be definitely established. Adjunctive, rather than competitive, approach in the application of cytology and roentgenography is emphasized.

Aberrant Pancreas. H.-K. Krogh. Nord. med. 58: 1892-1895 (Dec. 5) 1957 (In Norwegian) [Stockholm].

Aberrant pancreas is pancreas tissue outside of its normal site, without anatomic connection with the main organ. In most cases the condition remains symptomless throughout life. There is no characteristic symptom complex. In long-continued dyspepsia of the ulcer type or abdominal distress of more indefinite kind, in unexplained conditions with signs of choledochus stenosis or, less often, stenosis of the small intestine, and in inexplicable gastrointestinal hemorrhages, the possibility of an aberrant pancreas should be included in the differential diagnosis. When the anomaly is localized to the stomach or the duodenum, treatment is surgical. Even as an accidental finding the aberrant pancreas in these localizations should be removed. Malignant degeneration is possible. In the 2 cases reported, the patients had a long-continued dyspepsia. Adequate diet had little or no effect. The clinical diagnosis gave no certain clues for the diagnosis. In both cases the resected stomach showed macroscopic pathognomonic changes. A well-defined intramural tumor was found with a pseudodiverticulum in the mucous membrane over it. Local excision should suffice to relieve the patient of symptoms of aberrant pancreas.

SURGERY

Nontraumatic Intracerebral and Intracerebellar Hematomas (Clinical Types, Diagnosis and Therapy). I. Papo and R. Tritapepe. Minerva chir. 12:1505-1518 (Dec. 15) 1957 (In Italian) [Turin, Italy].

The authors report on 31 patients with intracranial hematoma, 27 of whom had an intracerebral and 4 an intracerebellar hematoma. The most common site of localization of the intracerebral hematoma was the frontal and temporal lobes. Five patients had the acute type of the disease marked by cerebral apoplexy. The subacute type, characterized by a sudden and severe onset of symptoms, followed by remission of some or all symptoms and subsequent cure or deterioration, was present in 17 patients. Nine patients had the chronic, nontumorous type of the disease. Arteriography is the best diagnostic aid for intracerebral and intracerebellar hematoma. Differential diagnosis of the acute types of the disease is difficult, because the same symptoms can be caused by a hemorrhage or by arterial obliteration. This difficulty is even greater in the subacute types. The patients with acute types of hematoma underwent surgery, and all 5 died within 11 postoperative days. Surgical operation on 26 patients with subacute and nontumorous types resulted in 3 deaths within 20 postoperative days and in cures of 23 patients, 11 of whom had no sequelae. Spontaneous retrogression of lesions, accompanied by normalization of the roentgenologic findings, was observed in 3 patients with intracerebral hematoma. Among 3 patients with intracerebellar hematoma who were operated on, 1 recovered without sequelae, the condition of 1 improved with a disturbance of the equilibrium as a sequela, and the 3rd patient in whom a hematoma was the result of a metastasis of a bronchial carcinoma died 3 months after the operation. It is not advisable to perform surgery on a patient with the acute type of hematoma until 4 or 5 days have elapsed after the stroke. An early surgical intervention is suggested in patients with subacute and nontumorous type of intracerebral and intracerebellar hematoma.

Carotid Body Tumors: A Report of Three Cases. H. C. Hollenbert and R. D. Jones. Am. Surgeon 24:3-6 (Jan.) 1958 [Baltimore].

The authors present a report on 3 patients with benign neoplasms of the carotid body in whom the tumor was successfully removed. The carotid body tumor is one of the nonchromaffin, nonepinephrine-producing series and is grouped with the glomus jugulare and the aortic arch bodies or glomus aorticum. The function of these organs is that of chemoreceptors. Other more distantly related tumors of this general group are those involving the sensory nerve endings of large blood vessel walls as well as the neuromyoarterial glomus at the finger tips and under the nails. Surgeons should be on the alert for these tumors. Tumors suspected of being in the category of a carotid body tumor should be explored surgically. When the tumor is found to be a carotid body tumor, a meticulous and deliberate approach should be made to remove it without disturbing the continuity of the common carotid and the internal carotid arteries. It is thought advisable to abandon the operation without removing the tumor in the event that it is necessary to interrupt the continuity of the internal carotid artery. It is advisable to utilize one of the newer methods of restoring blood flow if it has already been disrupted. In 1 of the patients operated on by the authors, the circulation was good for 6 hours, and then cerebral thrombosis developed. To avoid this, the authors favor the use of heparin. If the administration of the anticoagulant is begun 2 hours after the operation, the hazards of a hematoma in the wound are not as great as the hazard of a cerebral thrombosis.

Induced Cardiac Arrest as an Aid in Open Heart Operations. C. R. Lam, T. Gahagan, C. Sergeant and E. Green. J. Michigan M. Soc. 57:49-52 (Jan.) 1958 [St. Paul].

The authors review their clinical experience with induced cardiac arrest in 121 operations. Seventy-seven of these operations were for the repair of ventricular septal defect in 76 patients (1 patient had a second operation for the repair of a recurrence of the defect). Induced cardiac arrest has proved especially valuable in the repair of ventricular septal defect. In the perfectly dry and quiet field, the sutures can be placed with accuracy. Restoration of the heart beat has not been a problem. Ventricular fibrillation occurred infrequently in about 5%, and it was always converted with 1 electric countershock. Twenty-four of the 76 patients died.

Induced cardiac arrest was used in operations on 44 patients with a miscellaneous group of cardiac defects. Eight had complicated interatrial septal defects of the type commonly called atrioventricularis communis. All but 1 of these patients survived the immediate operative procedure, but there were 2 late deaths with evidence of recurrence of the defect. Successful operations were carried out for the removal of a myxoma of the right auricle, the excision of isolated infundibular stenosis of the right ventricle, the anomalous insertion of the veins of the right lung without interatrial septal defect, and the repair of triatrial heart (heart with 2 left atria and 1 right atrium). Operations for the cure of aortic stenosis and mitral insufficiency and for the excision of aneurysms of the arch of the aorta have been done with induced cardiac arrest, but with far less encouraging results. Induced cardiac arrest is a valuable adjunct to extracorporeal oxygenation in intracardiac operations. The cardioplegic drug acetylcholine was shown to be efficient not only in the experimental laboratory but also in operations on patients.

Persistent Thyroid Carcinoma. W. A. Meissner and M. A. Legg. J. Clin. Endocrinol. 18:91-98 (Jan.) 1958 [Springfield, Ill.].

This report is concerned with observations on 17 patients in whom thyroid carcinoma persisted for 10 to 26 years. The ages of the patients at the time of the initial treatment varied from 8 to 56 years, and the tumors included all types of thyroid cancer. Only 1 tumor became histologically more anaplastic with persistence; all others were histologically similar at the original and final examinations. The initial treatment in the majority of these patients was excision, often followed by irradiation. Only 3 of the patients underwent radical neck dissection. It would seem that, as a group, these patients with persistent thyroid cancer did not have what would be considered to be either vigorous or even adequate initial surgical treatment. Whether or not more aggressive therapy would have resulted in complete cures is problematical. Although recurrences were limited to the neck in most instances, tumors of each histological type showed a capacity for more distant metastases. Five of the 17 patients died as a result of persistent thyroid carcinoma. Six of the patients were given desiccated thyroid, presumably not as a treatment for the cancer but as a treatment for the hypothyroidism that followed operation and irradiation. The majority of patients who did not receive this medication survived for comparable periods. Thus, no conclusions regarding the effectiveness of desiccated thyroid as a therapeutic agent for thyroid carcinoma seem justified.

The Fate of the Internal Mammary Artery Implant in the Ischaemic Human Heart. A. Vineberg and G. C. McMillan. Dis. Chest 33:64-85 (Jan.) 1958 [Chicago].

Internal mammary artery implants were performed on 54 patients with coronary artery insufficiency; 40 (74%) of these patients were totally disabled by anginal pain and 45 (84%) had 1 or more known infarctions before surgical intervention. No patient was operated on as a preventive measure. All except 1 had anginal pain. Fifteen patients had angina decubitus; 9 (60%) of these died. Thirty-nine patients did not have angina at rest; 3 of these died, representing a mortality rate of 7.6%. The implanted human internal mammary arteries were studied at autopsy 60 hours to 18 months after implantation in 7 of the 9 patients who died. Only 1 (14.2%) of the 7 vessels was thrombosed, and 6 (85.8%) of the arteries remained patent. One was examined 18 months after implantation; not only was the artery open and branching, but it showed no evidence of intimal proliferation.

Of 49 patients followed for 6 months to 5½ years after the operation, 35 had no angina at rest before the operation and 26 (74.3%) of these were totally disabled before the operation; 23 (65.7%) of the 35 became free of pain or had slight pain, 3 (9.3%) had less pain, and 30 (85.7%) returned to work after the operation. Fourteen of the 49 patients had angina decubitus before the operation; 3 (21%) of these became free of pain or had slight pain, 1 had less pain, and 4 (28.5%) returned to work after internal mammary artery implantation and pericardial fat pad graft. These clinical results correspond to the known rate of mammary coronary anastomosis obtained in dogs.

An Evaluation of Scalene Node Biopsy. N. C. Delarue. Canad. J. Surg. 1:94-100 (Jan.) 1958 [Toronto].

Excision of a group of lymph nodes, normally found in the pad of fat lying on the anterior scalene muscle in the angle between the internal jugular and subclavian veins, is generally referred to as a "scalene node biopsy." These nodes might be expected to reflect the pattern of differing types of mediastinal adenopathy and, therefore, offer information regarding the nature and the extent of such changes. Scalene node biopsy has been carried out since 1954 in the examination of tissue from 82 patients at the Toronto General Hospital. The first group included 31 patients with proved bronchogenic carcinoma, in whom the procedure was carried out to determine the extent of the disease and to make certain that thoracotomy was not contraindicated on the basis of the obvious incurability that would be signified by spread of the disease beyond the accessible intrathoracic lymphatic plexuses. In the second group of 27 patients the clinical diagnosis of bronchogenic carcinoma had not been established pathologically.

Scalene node biopsy was positive in the case of 14 patients in these 2 groups which comprised 58 patients. It provided the only pathological proof of the diagnosis in 6 patients and avoided the needless risk of thoracotomy in 8 patients, who might otherwise have been thought to harbor curable disease. On the other hand, however, the procedure demonstrated real limitation in the assessment of possible mediastinal extension, for two-thirds of the patients (8 of 12) considered to have operable disease and with negative biopsies were found to have mediastinal extension that made resection impossible.

Other reports have stressed the potential diagnostic value of scalene node biopsy in obscure pulmonary and mediastinal disease, in which the pathological process is not apparent clinically and in which palpable lymph nodes, from which a biopsy specimen might be taken, are not detectable in accessible nodal areas. The present series supports these contentions. In the third group of 24 patients, who had obscure pulmonary and mediastinal disease, scalene node biopsy provided a definite pathological diagnosis in 16 patients, or two-thirds of the group, and the procedure must therefore in these instances be considered as an integral part of the investigation.

Surgical Treatment of Pulmonary Tuberculoma. V. Jagdschian. Deutsche med. Wchnschr. 82:2183-2187 (Dec. 20) 1957 (In German) [Stuttgart, Germany].

Fifty-one of 250 pulmonary resections for tuberculosis, carried out at the surgical clinic of the Free University of Berlin between 1952 and 1956, were for tuberculoma. The author reviews the roentgenologic and pathogenetic aspects of tuberculomas and discusses the clinical course. The following principles are suggested for the treatment of tuberculomas: 1. Patients with tuberculomas that on roentgenologic inspection have a diameter of less than 2 cm. should be kept under observation, and if there are no signs of activity, chemotherapy is unnecessary. 2. Large tuberculomas, with a diameter of more than 2 cm., call for early surgical treatment. 3. If further observation is preferred, in the absence of signs of activity, control studies are necessary at regular, relatively brief intervals. Chemotherapy is not indicated in these patients. In order to recognize a beginning breakdown of the tuberculoma, sputum tests must be made frequently; roentgenologic examinations should include tomography (body section roentgenography), because ordinary thoracic roentgenography does not permit estimation of a beginning breakdown. 4. If sputum culture yields bacilli or if tomography reveals a beginning breakdown or increase in the size of the lesion, the patient should be admitted at once to a hospital or sanatorium, and chemotherapy should be instituted in preparation for a pulmonary resection, in order to avoid dissemination or transformation into a tuberculosis with cavity formation. 5. The earlier resection is carried out, the better are the prospects of cure, and a less extensive intervention may suffice. 6. Whenever a tuberculoma gives the impression of a solitary round focus, the possibility of a tumor should be taken into consideration, not only in persons of advanced age but also in younger persons. An early exploratory thoracotomy is to be greatly preferred to prolonged observation in these cases. Peripherally located asymptomatic tumors were found by Overholt to be operable in 90% of the patients and the hilar lymph nodes were free from metastases in 70% of the patients, provided that thoracotomy was carried out at once. When patients were kept under observation for up to one year before thoracotomy was undertaken, the tumors were still operable in only 60%, and only 11% were free from metastatic invasion of the hilar lymph nodes.

Treatment of Cancer of the Stomach: End Result. S. F. Marshall. Gastroenterology 34:34-46 (Jan.) 1958 [Baltimore].

The author studied the end-results in 1,708 patients with gastric cancer who were admitted to the Lahey Clinic in the 23 years from 1932 through 1954. Malignant gastric neoplasm was demonstrated by surgery in 1,666 patients, and the remaining 42 had clinical evidence of advanced gastric cancer. The surgical mortality greatly declined from 27% during the period 1932-1934 to 5.7% during the period 1950-1954. The mortality in subtotal gastrectomy is 3.2% and in total gastrectomy, 7%. Little progress has been made in earlier diagnosis, however, and there has been no increase in the resectability rate. The curability rate has increased in that the 5-year survival rate, after various types of resection for gastric carcinoma, has risen from 15.4 to 39.5% and the 10-year survival rate, after resection, has increased from 7.7 to 16.6%. There is need for constant propaganda among the profession and the public regarding the symptoms of gastric carcinoma, so that there may be an awareness of the frequency of neoplasms, with the possibility that these patients may have an opportunity for cure with a low operative risk. The inevitable result of failure to recognize carcinoma of the stomach and to operate on such patients early is death in all such patients. This picture can be improved by the alertness of every physician who is seeing patients with persistent gastrointestinal distress.

Urgent Problems in Surgery of the Pancreas. O. Poulsen. Ugesk. læger 119:1579-1586 (Dec. 5) 1957 (In Danish) [Copenhagen].

Untreated cancer of the pancreas is invariably fatal. Pancreatoduodenectomy is justified not only in cancer of the ampulla but also in cancer of the head of the pancreas. In 29 cases published, 13 of which were cancer of the ampulla and 16 were cancer of the head of the pancreas, the patients survived more than 5 years after the intervention. The average time of survival is longer than after palliative operations, and these do not show decreasing mortality or increasing length of survival. The patients do well after the operation. The risk in radical operation may be almost entirely eliminated by application of pancreography and biopsy with the Vim-Silbermann needle. Radical operation must never be performed without histologically certain diagnosis, unless both the common bile duct and the hepatic duct are dilated; otherwise, as in the case of patients with locally inoperable disease, anastomosis should be established between the bile duct and the intestine and also between the pancreatic duct and the intestine. In case of suspicion of cancer of the pancreas, exploratory laparotomy should be done at once.

Multiple Carcinomas of the Large Intestine: A Review of the Literature and a Study of 261 Cases. C. G. Moertel, J. A. Bargen and M. B. Dockerty. Gastroenterology 34:85-98 (Jan.) 1958 [Baltimore].

The authors have reviewed the pathological findings in patients with adenocarcinoma of the colon or the rectum, proved at operation or from autopsy specimens, who were seen at the Mayo Clinic during the 10-year period from Jan. 1, 1944, through Dec. 31, 1953. Cases were accepted as *multiple cancers only if they met the following* criteria: 1. Each lesion must be of pathologically proved malignancy. 2. All lesions must be distinctly separated by intervals of normal intestinal wall. 3. The possibility that one of the lesions represents a local extension or metastasis must be ruled out beyond any reasonable doubt. Of a total of 6,012 patients with carcinoma of the colon or the rectum, 261 were shown to have multiple lesions confirmed by the criteria listed. This represents an incidence of 4.3%. Simultaneous lesions were found in 157 patients, 95 patients had interval lesions, and 9 had simultaneous and interval lesions. If one considers low-grade in situ carcinoma as representing a true malignant neoplasm, the over-all occurrence of multiple lesions over the same 10-year period would be 985 cases (12.9%) out of a total of 7,664 cases of colonic cancer.

A marked tendency to multiplicity was observed in carcinoma of the colon associated with multiple polyposis or with chronic ulcerative colitis. Some evidence of hereditary factors was obtained in predisposition to malignant disease of the colon. Earlier reports on multiple cancers of the large intestine have indicated that the concept of carcinoma of the colon as a multicentric disease has steadily grown in acceptance over the past decade. When a malignant lesion has been diagnosed in the colon or the rectum, the entire large intestine must be considered a potential source of malignant disease. An integral part of the management of carcinoma of the large intestine must be constant vigilance to insure early diagnosis and adequate treatment of both simultaneous and interval lesions.

Physiological Considerations in Gastric Surgery. R. C. Harrison. Canad. J. Surg. 1:107-115 (Jan.) 1958 [Toronto].

The results of the operative treatment of gastric and duodenal disease are not satisfactory in that a significant percentage of patients still have symptoms after the operation or, more frequently, have new problems. In the Polya operation, the storage capacity of the stomach is reduced by three-quarters; the remainder of the gastrointestinal tract is deprived, at least temporarily, of its autonomic nerve supply; the antrum, whose secretion is alkaline, is discarded; the pylorus is irretrievably lost; and the bolus of food is directed to the jejunum, where it hastens on down the intestinal tract. Biliary and pancreatic secretions are inadequately stimulated and arrive as an irritating mixture in the empty stomach too late to mix with the bolus, and eventually follow the food down without properly aiding in its digestion.

The cause of peptic ulcer is probably an increase in the production of acid, due to the hyperactivity of 1 or more of the normal stimulating mechanisms or due to a failure of 1 or more of the normal inhibiting mechanisms to control the level of acidity in the gastroduodenal area. Any procedure which decreases acidity in the region of the antrum results in increased acid production by the body of the stomach. The reverse is also true. The mechanism for this is either an increase in gastrin production or a decrease in the production of an inhibitory substance by the antrum. Thus, vagotomy tends to increase parietal cell acid production, as does gastroenterostomy. The effect of pyloroplasty is less marked. Antral excluding procedures, such as those of Eiselberg, Finsterer, or Devine, markedly increase acid production. Present procedures for ulcer control are either inadequate, adequate but with unhappy postoperative sequelae, or unproved on both counts. The search for a better procedure should be based on physiological principles and should be thoroughly worked out on experimental animals. Of the 12 or more procedures now being tried on clinical cases, probably 90% will prove to be inadequate for ulcer control. Some are frankly ulcerogenic.

Excision and Arterial Grafting in the Surgical Management of Popliteal Aneurysms. D. J. Austin and J. E. Thompson. South. M. J. 51:43-48 (Jan.) 1958 [Birmingham, Ala.].

The authors report on 14 men and 1 woman, between the ages of 50 and 85 years, with 21 popliteal aneurysms (6 patients having bilateral aneurysms). Seven aneurysms in 6 patients were treated by conservative measures, such as sympathetic blocks and administration of anticoagulants. They were poor-risk patients. Three died, 1 of cancer of the prostate and 2 of cardiovascular diseases. Gangrene requiring amputation occurred in 3 of the remaining 4 patients, and intermittent claudication in the 4th. Six aneurysms in 6 patients were treated by sympathectomy only, sympathectomy and excision of the aneurysm, or excision only. There were no deaths, but there were 2 amputations for gangrene. In the 4 patients with surviving extremities, none of these was entirely asymptomatic, but 3 were satisfactory and allowed the patient to walk with only mild inconvenience. The results in this second group of surgically treated patients thus were much superior to those in the patients treated by conservative measures. Eight aneurysms in 7 patients were treated by excision, arterial homografts, and lumbar sympathectomy. These patients were followed for 2 weeks to 20 months after the operation. One with an acute arterial occlusion caused by embolization from the aneurysm was operated on as an emergency and died suddenly of a cerebrovascular accident 2 weeks after amputation. The 6 surviving patients have viable extremities with good to excellent circulation. Five have palpable pedal pulses.

Arteriosclerotic popliteal aneurysms carry a poor prognosis as to life and extremity, if untreated. The excellent results obtained in the third group of these patients suggest that excision of the aneurysm and replacement with an arterial graft are at present the best method of treatment. This method should be practiced before serious complications occur. All patients with symptoms of peripheral vascular disease of the legs should have a careful examination of the popliteal areas. An aneurysm is usually quite apparent. At times, however, its diagnosis may be difficult. One should suspect the lesion in patients with markedly increased oscillations. A careful general evaluation, especially cardiac, is imperative before any contemplated surgical treatment. Although the best results are obtained when operation is done at an elective time, extremities may be saved by emergency procedures after acute occlusions, provided that these procedures are carried out without delay.

Congenital Absence of the Fibula. T. C. Thompson, L. R. Straub and W. D. Arnold. J. Bone & Joint Surg. 39A:1229-1237 (Dec.) 1957 [Boston].

Congenital absence of the fibula was observed 31 times in 25 patients, 11 girls and 14 boys. Most of these patients were first seen in infancy. A list of the characteristic deformities shows that shortening existed in all 31 extremities; talipes equinovalgus was also present in 31 limbs; the fibula was completely absent in 30 and partially absent in 1 of the limbs; anterior tibial bowing was present in 25 and medial bowing in 11 limbs. There were also present tarsal anomalies in 26 limbs, metatarsal anomalies (absence of 1 or more rays) in 26, shortening of the femur in 17, pretibial dimple in 17, tight band in 18, genu valgum in 8, webbing of toes in 5, and other skeletal anomalies in 5. Of the 31 deformed limbs in this series, 26 are classed as typical. Hypoplasia of the entire extremity, absence of the fibula, anterior bowing of the tibia, talipes equinovalgus, and anomalies of the tarsal and metatarsal bones are the typical components of this anomaly. When the fibrous band was sought in a patient with the typical defect, it was always found. When this band was removed, partial or complete correction of each element of the deformity, except for limb-length discrepancy, was effected.

There were no stigmata of neurofibromatosis, except an occasional café-au-lait mark. No fractures occurred, and all the tibial osteotomies healed promptly. The tibial bowing is an entirely different condition from congenital pseudarthrosis of the tibia. The cortical sclerosis at the site of maximum tibial bowing can be explained on a mechanical basis, since after correction of the bow the sclerosis lessens. It seems reasonable to asume that the bowstring action of the tight band is contributory to the tibial deformity and the talipes equinovalgus of the foot. How much this contributes to limb shortening cannot be determined. The authors believe that treatment should include excision of the tight band and release of any other tight soft-tissue structure in the calf at the earliest possible age. In this series excision of the band allowed better positioning of the foot, permitted a more normal gait, and made Syme's amputation possible if indicated at a later date. The Syme amputation is much better than the standard below-the-knee type, as the latter often results in a thin, curved, atrophic stump. The slightly bulbous but short Syme stump can be fitted into a standard below-the-knee prosthesis which matches the normal leg.

Sarcoma in Paget's Disease of Bone. C. A. Porretta, D. C. Dahlin and J. M. Janes. J. Bone & Joint Surg. 39A:1314-1329 (Dec.) 1957 [Boston].

This study includes the cases of 16 patients with bone sarcoma-complicating lesions, diagnosed roentgenographically as Paget's disease, who were seen at the Mayo Clinic prior to January, 1956. To locate these cases, the records of 1,753 patients who had Paget's disease were reviewed. A clinical and pathological study of these 16 patients is presented. The English-language literature was reviewed, and a total of 128 cases were evaluated as a group. The incidence of sarcoma among the 1,753 patients with Paget's disease seen at the Mayo Clinic was 0.9% The average age of patients in whom the 2 conditions coexisted was 58 years, with a range from 32 to 72 years. The sex ratio of the 1,753 patients with Paget's disease was 2 to 1, males to females, and this ratio was the same in the 128 collected cases of sarcoma in Paget's disease. Pain, swelling, or both were present in every case of sarcoma in Paget's disease, and these were the most important clinical features in the diagnosis.

Many patients were unaware of the presence of Paget's disease until sarcoma developed. Of the sarcomas in Paget's disease of the long bones, 18% developed at the site of recent fractures. All 10 of the sarcomas examined microscopically in this series were osteogenic in type. In 5 of the 7 cases in which Paget's disease was also noted microscopically, cellular areas were seen, areas which might be termed presarcomatous. The prognosis of sarcoma in Paget's disease is poor, only 1 patient with a 5-year survival being found among the 128 patients whose cases were reported in the literature. Treatment has consisted in amputation or roentgenotherapy. Delay in diagnosis and treatment is considered to be one of the factors in the poor prognosis. While it does not seem practical to follow every patient with Paget's disease with annual roentgenograms, each patient should be informed of the symptoms of this rare complication and advised to return immediately should pain (or increase of pain) or swelling develop.

NEUROLOGY & PSYCHIATRY

Neurologic Syndromes of Malignant Tumors: II. Cancer Metastases to Nervous System. D. Furtado. Arq. pat. 29:412-430 (Nov.) 1957 (In Portuguese) [Palhava, Lisbon].

This article is the second part of work reported on by the author in a previous paper, an abstract of which appeared in The Journal. Observations on several hundreds of patients at the Instituto Portugues de Oncologia in Lisbon are reported in the 2 articles. The frequency of cerebral metastases has greatly increased during the last 5 years. Bronchopulmonary carcinoma and carcinoma of the breast are the most frequent types of cancer giving rise to cerebral metastases. Cerebral metastases, as a rule, are multiple. The clinical symptoms are, with a few exceptions, the same as those produced by primary cerebral tumors. Differential symptoms of cerebral metastases are those of frequent acute headache, dementia, convulsions of the type of petit mal, and, in rare instances, symptoms caused by the localization of the metastases in the cranial nerves. A differential diagnosis between cerebral metastases and primary cerebral tumor is difficult. It is important to give the patients the benefit of neurosurgery. Two definite syndromes of cerebral metastases produced by carcinoma of either the lung or the breast are frequent and are of diagnostic value. In pulmonary carcinoma the cerebral symptoms appear either before or shortly after the appearance of pulmonary symptoms. The pulmonary disease runs a rapid course, with diffusion of the cancer and death of the patient within not more than 1 year after the appearance of the cerebral symptoms. In some cases symptoms of the original tumor do not appear, and the tumor is discovered at autopsy. There is a cerebral, acute, intracranial hypertension from cerebral edema. The focal symptoms are predominant, and pain is moderate. The metastases are located in the parenchyma. In carcinoma of the breast the original tumor appears several years before the cerebral symptoms. Acute headache from meningeal irritation is frequent. The disease runs for several years. The metastases are of corticomeningeal localization.

In the diagnosis of either solitary or multiple cerebral metastases, electroencephalography, angiography, ventriculography, and pneumoencephalography yield poor results. Better results are obtained by the use of radioisotopes. Ovariectomy, suprarenalectomy, hypophysectomy, or the destruction of the hypophysis by implantation of radioactive isotopes in the sella turcica give good results in a certain percentage of cases. Surgical removal of the cerebral metastases gives satisfactory results, provided that the metastasis is solitary, that it is located where the operation would not cause functional disturbance, and that the primary tumor is operable or has been removed. When removal of the cerebral metastases is accomplished in these conditions, survival of the patient is 3 times as long as that of patients who are not operated on. Neurological sequelae, such as aphasia or hemiplegia, do not occur. Cerebellar metastases and metastases in the spinal cord are extremely rare.

Ependymoma of the Cauda Equina: A Report of the Clinicopathologic Aspects and Follow-up Studies of Eighteen Cases. W. A. Ayres. Mil. Med. 122:10-35 (Jan.) 1958 [Washington, D. C.].

The author discusses the clinicopathological aspects, operative findings, diagnosis, and treatment of 18 patients with ependymoma of the cauda equina, filum terminale, or conus medullaris. Seven ependymomas were of the epithelial type, 6 of the myxopapillary type, and 4 of the cellular type. Follow-up studies on the 18 patients revealed that 4 patients were dead. Of the 14 living patients, 8 are well and 6 have symptoms. All 7 patients who had an epithelial ependymoma are alive; 5 are well, and 2 have symptoms probably not related to recurrent neoplasm. Three of 6 patients with the diagnosis of myxopapillary ependymoma are dead, 2 are alive and well, and 1 is alive but seriously ill with neoplasm. Of 5 patients with cellular ependymoma, 1 is dead, 3 are alive but symptomatic, and 1 is alive and well. The long-range prognosis for patients with epithelial ependymoma is good, while the prognosis for patients with myxopapillary ependymoma appears poor. The immediate prognosis in all types of ependymoma after excision appears good, and most patients obtain relief from symptoms. Ganglion cells in an ependymoma of the cauda equina are reported for the first time. A theory as to the evolution of protein-rich stromal spaces within ependymomas of the cauda equina is presented. Three fatal cases of ependymoma of the cauda equina, with autopsy findings, are reported in detail.

A total of 107 cases of ependymoma of the cauda equina published in the world literature, including this series of 18, are reviewed. These neoplasms offer considerable difficulty in clinical diagnosis because of their variable clinical features; erroneous diagnoses include herniated intervertebral disk, brain tumor, genitourinary tract disease, sacroiliac sprain, sciatica, and progressive neuropathic atrophy. As a result, diagnosis and operative excision of the neoplasm are sometimes delayed, and irreparable damage to the spinal cord occurs. Difficulty is also encountered in pathological diagnosis, the neoplasm having been mistaken for angioglioma, glomus tumor, antiomatous meningioma, hemangiopericytoma, protoplasmic astrocytoma, endothelioma, endothelial sarcoma, astrocytoma, medulloepithelioma, and particularly hemangioma and hemangioblastoma.

In the diagnosis of ependymoma of the cauda equina the chronology of symptoms is important. The first symptoms are pain and soreness of the lower back with radiation of pain down the sciatic nerve, often associated with paresthesias. Later, there is anesthesia followed by flaccid atrophic paralysis. The early sensory symptoms are caused by irritation of the posterior sensory roots by the expanding neoplasm. Bladder and bowel function are seldom affected early in the disease. Sensory and motor root signs and symptoms are valuable because they point to the level of the lesion. Early diagnosis of ependymoma of the cauda equina is of extreme importance, since at first these neoplasms are encapsulated and may be excised with relative ease. Later, the capsule may rupture and the neoplasm extend and seed throughout the spinal subarachnoid space, making operative removal difficult or impossible. Treatment with deep x-ray therapy seems indicated only for palliation in cases of recurrent ependymoma after operation has failed to effect a cure. X-ray therapy may cause dramatic relief of symptoms but appears to have no curative value.

Air Transportation of Patients with Poliomyelitis: Experience with 193 Respirator Cases. H. T. Wilson. J. Aviation Med. 29:27-32 (Jan.) 1958 [St. Paul].

Air transportation of patients with respiratory insufficiency has been carried out by the Military Air Transport Service since 1952. In addition, aircraft of the Air National Guard and of private owners are used for moving respirator patients. These missions expose patients to difficulties and hazards that frequently go unappreciated. The Air Force School of Aviation Medicine first studied this problem in 1954. Reports on the first 112 cases transported by the Air Force were included in a preliminary report. The original study resulted in a revamping of techniques and in changes regarding the care of respirator patients during air transportation. This communication reviews subsequent experiences of the respirator teams. The patients in this recent study are designated as group B, and those in the former study as group A. Of a total of 193 patients, 32 had acute poliomyelitis. Nine of the 27 patients with bulbospinal involvement in group A had adequate records for evaluation. These are compared with 3 patients in group B. The absence of inflight difficulties and postflight complications in the last period of study was due to selection of cases. The 3 patients transported had no signs of respiratory insufficiency and were transported short distances to nearby respirators. As a general rule, patients acutely ill with anterior poliomyelitis were not transported by air. Studies had indicated that this was far too hazardous a procedure to be compatible with a "life-saving" affort. If the patient was acutely ill in a locality where respirator aid was not available, it was desirable that respirator care be flown to this patient.

Chronic cases comprise the bulk of the study. Those patients with only spinal involvement and respiratory insufficiency had few difficulties during or after flight. Of the 36 patients in this category, 4 experienced minor incidents during the trip. The patients with bulbospinal involvement had the largest number of complications in both groups. Twenty-two patients in group A were compared with 23 patients in group B who had adequate follow-up studies. Oxygen was no longer given below 8,000 ft. to any patient in group B. Emphasis was shifted to adequate ventilation. Of the 22 bulbospinal patients in group A, 17 had inflight difficulties and 9 had some postflight complications. Of the 23 patients in group B, 13 experienced some untoward events during transportation, but there was prompt correction of inadequate ventilation and accumulating secretions. Three patients in group B experienced postflight complications. No inflight fatalities were reported in this study. However, the test of successful air evacuation is not the presence or the absence of inflight fatalities. The patient may develop an obstructed airway during the flight, with atelectasis and subsequent pneumonia, or he may suffer underventilation during the flight, with increased damage to his central nervous system and vital centers. The true measure of successful air evacuation depends on whether the patient's condition was ill-effected by the flight.

Thrombosis of Internal Carotid Artery Verified by Arteriography. H.-H. Jacobsen and E. Skinhøj. Danish M. Bull. 4:240-248 (Dec.) 1957. (In English) [Copenhagen].

Of 27 patients (21 men, 6 women) with diagnosis of thrombosis of the internal carotid artery, the youngest was 33 years old on admission and the oldest was 66. Neither case history nor clinical investigations showed predisposition in 12 patients;

8 patients had arteriosclerosis and/or arterial hypertension; in 4 patients there had been considerable abuse of alcohol; 2 patients had generalized vascular disease; and 1 patient had diabetes. In 3 patients the symptoms occurred in direct relation to head injuries. In 10 patients the onset was insidious; in 17 it was apoplectic in manner, with loss of consciousness in only 4. Three patients died during or shortly after the period of hospitalization. The course is unpredictable, and the tendency to recurrence is great. Clinical diagnosis of thrombosis of the internal carotid artery is difficult, and, if arteriography is not resorted to, it can be established only in the rare cases when contralateral hemispheric symptoms occur simultaneously with ispilateral eye symptoms, observed only when the thrombosis also affects the common carotid or external carotid arteries. The diagnosis must be borne in mind in all cases of intermittent or progressive hemispheric deprivation symptoms and in rapidly developing cryptogenic conditions of dementia. Before resorting to arteriography, cerebral tumor was regarded as the most probable diagnosis in 17 out of the 27 patients. Electroencephalography may become a valuable diagnostic aid. Arteriography of the internal carotid artery is the only certain diagnostic aid.

GYNECOLOGY & OBSTETRICS

Pregnancy and Addisonian Pernicious Anæmia. J. F. Adams. Scottish M. J. 3:21-25 (Jan.) 1958 [Glasgow].

This paper describes the antenatal and the postnatal course of 6 patients receiving treatment for pernicious anemia. The diagnosis of pernicious anemia had been established in all of them prior to the pregnancy under discussion. The diagnostic criteria were macrocytic anemia, megaloblastic bone marrow, and histamine-fast achlorhydria, with response to parenterally administered vitamin B_{12} or to vitamin B_{12} and intrinsic factor given by mouth. The women who were treated with injections of vitamin B_{12} did not show an increased need for vitamin B_{12} as judged by the peripheral blood values. The picture was different in the patients maintained on oral therapy; although the hemoglobin values were high, the subnormal red blood cell counts, the high color indexes, and the subnormal serum vitamin B_{12} levels prior to delivery, and spontaneous correction of these abnormalities in the puerperium, suggested an increased need for vitamin B_{12} during the antenatal period.

There is evidence that the fetus acts as a parasite on the maternal vitamin B_{12} stores, but it is difficult to believe that fetal need could account for the maternal loss, unless extraordinarily large amounts of vitamin B_{12} are needed for fetal growth. A possibility which merits consideration is that the hormonal imbalance during pregnancy in some way affects the metabolism of vitamin B_{12}. Such a mechanism has been suggested as the cause of the megaloblastic anemia of pregnancy, a disease which, in temperate climates at least, is due to folic acid depletion and in which the serum vitamin B_{12} levels are usually normal. As far as the treatment of patients with pernicious anemia who become pregnant is concerned, it is pointed out that vitamin B_{12} and intrinsic factor should not be given orally, and that the parenterally administered dose of vitamin B_{12} should be greater than that which maintains normal serum levels prior to conception. Involuntary infertility prior to the recognition and treatment of the anemia was a striking feature common to all patients in this series. They were emphatic that their infertility was involuntary, and all conceived soon after anti-pernicious-anemia therapy was begun.

A Clinical and Biological Study of 2 Androgynoid "Sisters." A. Granjon and S. Yannotti. Presse méd. 65:2180-2183 (Dec. 25) 1957 (In French) [Paris].

The authors report on 2 sisters, aged 22 and 20 years, respectively, who consulted with them for primary amenorrhea. The patients were essentially normal-appearing women, with normal development of the breasts and with normal female fat deposits. Three peculiarities, however, were noted. Both patients had figures which were rather tall for women (1.74 m. [5 ft. 9 in.] and 1.65 m. [5 ft. 5 in.] respectively). Axillary hair was absent, and pubic hair was scanty. With the patients in standing position, bilateral small oval masses were visible in the inguinal region. Gynecologic examination revealed a normal vulva but underdeveloped labia majora and hymen and a vagina which was shallow and ended with a flat infundibulum without cervical orifice. On rectal examination no uterus and no adnexa were felt. The patients thus presented a clinical syndrome for which the term "testicular feminization" has been coined.

Surgical intervention confirmed the absence of uterus, fallopian tubes, broad and round uterine ligaments. The 2 masses in the inguinal canal were removed. Microscopic examination revealed them to be small testes of prepuberal appearance. They contained undifferentiated cells and among them some spermatogoniums showing start of maturation. The seminiferous tubules had a diameter one-third of the normal size. There was a pronounced hyperplasia of Leydig's cells. Small whitish nodules, which were noted on macroscopic examination of the specimens, proved to be testicular adenomas of Pick which did not contain Leydig's cells. Hot flashes, night sweats, headache, and occasional vomiting occurred postoperatively and required substitute hormone therapy. The patients had a more feminine behavior after the operation, but the pubic hair did not increase. Determination of the estrogen level in the blood did not show any change after the surgical intervention as compared with the preoperative level. The excretion of 17-ketosteroids in the urine was somewhat reduced 1 year after the operation. Vaginal smears were atrophic before and after the operation. Removal of the ectopic testes seemed to have been justified because of the well-known risk of degeneration, because of psychic repercussions from their presence, and because they were slightly tender. Postoperative changes in the development of the vagina were not notable.

"Testicular Feminization" in Adults. G. A. Hauser, M. Keller, T. Koller and others. Schweiz. med. Wchnschr. 87:1573-1580 (Dec. 28) 1957 (In German) [Basel, Switzerland].

Testicular feminization is a little known but a sharply defined and typical form of intersexuality which is readily diagnosed on the basis of clinical symptoms. The authors have reviewed the symptoms and the endocrinologic aspects of this form of intersexuality in 6 adults whose phenotype was decidedly feminine. A clinical diagnosis of this form of intersexuality can be made on the basis of the following symptoms: primary amenorrhea, with sterility that is refractory to treatment; complete absence of hair growth in the pubic area and in the axilla ("hairless woman"); absence or blind ending of the vagina; absence of the uterus; and presence of bilateral inguinal hernias in which gonads may be palpated (testes!). However, the chromosomal and gonadal sex of these persons is of the male type. Their excretion of neutral 17-Ketosteroids shows nearly the same value as that of normal men. The estrogen output is low, the follicle-stimulating hormone levels are normal, and a distinct excretion of pregnanediol and pregnantriol complex can be observed. The estrogen effect in the vaginal smears and the breast development are caused by testicular activity, but the remainder of the female sex characters are not.

Prophylactic castration has been recommended by some investigators in the belief that the dystopia of the testes may lead to malignant degeneration. The authors reject castration because they feel that it will impair the health of these patients by resulting in the abolishment of certain functions or in endocrine insufficiency. This form of intersexuality belongs to the condition of male pseudohermaphroditism. The different forms of this condition range from hypospadias and "testicular feminization" to male gonadal dysgenesia corresponding to the progressing testicular insufficiency and increasing feminization of the male. "Testicular feminization" is a true endocrinopathy in which the length of the vagina indicates the degree of testicular insufficiency. Histologically the testes show no degenerative changes but only failure in the development of the "anlagen," which corresponds to the degree of feminization in the male.

Untreated Syphilis: A Study of Some Aspects of Its Minimum and Maximum Influence on the Obstetric History and Progeny of the Human Female. F. S. Bonugli. Brit. J. Ven. Dis. 33:217-222 (Dec.) 1957 [London].

The author has analyzed the obstetric histories of 79 consecutive and unselected parous women with untreated syphilis in a manner which has presented some insight into the minimum influence of syphilis on the products of human conception. The obstetric histories of 13 additional parous women with untreated syphilis were analyzed to show the approximate maximum damage which can be caused in these circumstances by syphilis. Of a total of 445 conceptions, the outcome was determined in 324. The following statements seem to be justified. The chance of miscarriage or stillbirth interrupting a conception in the infected, untreated woman was about 1 in 4 in both groups of patients studied, i. e., the fetal rate of loss per 1,000 conceptions was 268 in the study of the minimum damage and 226 in that of the maximum damage. The rate of loss for conceptions at 1 year was 377 per 1,000 in the minimum study and 396 in the maximum study. These figures differ to the extent of 1.9%. Of the offspring examined, 35.3% were found to be syphilitic in the minimum study and 66% in the maximum study, if allowance is made for the 2 dead persons known to be syphilitic. No grounds appear to exist to support the belief that syphilis is spontaneously losing its power to attack, damage, or destroy the products of conception in the human female. It is probable that the picture described as the one presenting the "maximum" influence of syphilis on the obstetric history and the offspring of the human female is a purely average one. Any discussion on the prognosis for the untreated syphilitic patient must invariably incorporate the obstetric outlook for the woman.

Prolapse Operation According to Fothergill (Manchester Operation): 75 Cases. K. Bierring and C. L. S. Bohn. Nord. med. 58:1818-1819 (Nov. 21) 1957 [Stockholm].

From 1940 through 1954 the Fothergill operation for prolapse of the uterus was performed on 75 patients, 31 of whom were under 50 and 44 were between 50 and 70 years of age. There was a total prolapse in 15 cases. One death from pulmonary embolism occurred after the operation. One patient who died during the time of observation had been free from symptoms. On examination from 1½ to 8 years after the operation, 56 of the remaining 73 patients were subjectively and objectively well, 12 were subjectively free from symptoms, and in 5 there was a relapse with symptoms (2 patients had cystocele, 1 patient had vaginal hernia, 1 had rectocele, and 1 had uterine prolapse after 2 births). The less serious degree of vaginal prolapse can successfully be treated with vaginoplasty and perineoplasty. The Fothergill operation is recommended as the normal method for treatment of prolapse of the uterus. The advantages are that only one intervention is required, which can be carried out at an age when conception is possible, without sterilization, that it does not cause a ventral hernia, and that it gives results fully as good as those obtained by vaginal operation or ventrofixation.

PEDIATRICS

Chronic Vitamin A Intoxication: Report of a Case in an Older Child and Review of the Literature. T. K. Oliver Jr. A. M. A. J. Dis. Child. 95:57-68 (Jan.) 1958 [Chicago].

A 14-year-old girl was admitted to a children's hospital with the chief complaint of leg pain of 5 weeks' duration. Two years prior to admission, superficial, nonpitting acne vulgaris had developed in this patient, for which, 10 months prior to admission, 200,000 units of vitamin A daily had been prescribed by a dermatologist. Two months prior to admission she had had her last normal menstrual period, succeeding ones being scanty and of 1 day's duration. About the same time, the patient noted scaling and cracking of her lips and fissuring at the corners of her mouth, for which she used salves without success. Five weeks before admission she began complaining of dull constant pain in her legs, particularly about the knees, aggravated by activity. At this time her private physician directed that vitamin A therapy be discontinued. This advice was not heeded by the patient. In the month prior to admission, her leg pain worsened. She walked with a noticeable limp, favoring her left leg. She observed that her scalp hair became dry in texture and fell out in large quantities with brushing. A maculopapular eruption on her trunk and desquamation of palms and soles developed. The family observed that she manifested increasing irritability. Examination revealed that the skin was dry, and the skin of the palms and soles was desquamating in sheets. The underlying skin in these areas was delicate and thin. The scalp hair was dry and loose, and there was moderate alopecia. There was bilateral papilledema (proved by binocular ophthalmoscopy), and linear hemorrhages surrounded each disk. The patient had tenderness in both legs, more on the left, particularly medial and inferior to the tibial tubercle. Within a week after a diagnosis of chronic hypervitaminosis A was made and all medications were discontinued, symptoms and signs began to abate, and the patient was entirely asymptomatic, except for continued loose hair, after 2 weeks. A review of the English literature revealed 36 cases of hypervitaminosis A. In general, all age groups share common symptoms and signs. X-ray changes of the long bones occurred in 100% of infants and toddlers but in only 1 of 9 persons in the older groups. Central nervous system symptoms and signs due to increased intracranial pressure occurred in 20% of the total group. All manifestations of hypervitaminosis A subside promptly after withdrawal of vitamin A. A latent period (averaging 10 months) between the initiation of excessive dosage of vitamin A and the emergence of symptoms is characteristic. Except in situations of impaired fat absorption, the recommended daily dose should not be exceeded. The value of vitamin A in large doses in certain skin diseases is questionable. A clinical dermatological trial of vitamin A therapy should not exceed 50,000 units daily for longer than 1 or 2 months. Vitamin manufacturers should include a warning of possible intoxication due to excess dosage on the labels of vitamin A preparations.

Severe Intoxication with Vitamin D: Treatment with Cortisone. A. A. Eggink. Nederl. tijdschr. geneesk. 101:2004-2008 (Oct. 26) 1957 (In Dutch) [Amsterdam].

The author presents the history of a 6-year-old boy who in the course of 6 weeks had received 3.7 million units of vitamin D. The dose had been administered by intramuscular injection and by mouth. All typical signs and symptoms of vitamin D intoxication were present, namely, anorexia, nausea, vomiting, thirst, polyuria, polydipsia, constipation, loss of weight, high blood pressure, albuminuria, erythrocyturia, cylindruria (tube casts), increased erythrocyte sedimentation rate, hypercalcemia, and hypercalciuria. Treatment consisted of forced fluid intake, low calcium diet, and administration of cortisone. Calcium balance studies were carried out. It appears probable that a fatal outcome of the intoxication was prevented by cortisone therapy.

***Hormonal Therapy for Enuresis:* A Clinical Contribution.** N. Marocco and G. Pesce. Gazz. med. ital. 116:444-452 (Oct.) 1957 (In Italian) [Turin, Italy].

Eleven boys and 8 girls with enuresis, 5 to 18 years of age, received as treatment a total dose of from 3,000 to 8,000 units of chorionic gonadotropin. The premedication tests for intestinal parasites and for tonsillar and adenoid enlargement were negative. The therapy resulted in 9 cures, in 6 clinical improvements, and in 4 failures. The best results were obtained in older children who did not present a marked mental retardation and who had anomalies either of the genitalia or of the neck of the bladder. The effect of chorionic gonadotropin on enuresis is indirect in the sense that the drug first stimulates the activity of the cells producing sexual hormones which, in turn, correct the urinary tract instability. Hormonal therapy should not be used routinely. Chorionic gonadotropin can be administered only for a short period of time to patients with retarded growth of the body or the lower urinary tract; this retardation is more frequent in boys. Testicular hormones should be used cautiously in girls in order to avoid interference with functional genital growth. Hormones of the testosterone group can be used in girls, because they do not cause secondary virile effects. The authors suggest that any therapeutic procedure for enuresis should be complemented with a sympathetic and cooperative attitude on the part of the parents.

Pulmonary Echinococcosis in Children. J. M. Sala Ginabreda, J. Albós Martínez and J. Ramis Coris. Rev. españ. pediat. 13:681-690 (Nov.-Dec.) 1957 (In Spanish) [Saragossa, Spain].

Pulmonary echinococcosis is rare in children. During the course of the last 6 years, 5 patients (infants and children) with pulmonary echinococcosis were hospitalized in the Hospital for Children with Infectious Diseases, Barcelona. The patients lived under poor hygienic conditions. Two lived in agricultural regions, and 3 had pet dogs in their homes. A diagnosis of pulmonary echinococcosis with a closed hydatid cyst was arrived at by roentgenologic examination. This examination shows the typical roentgen-ray picture of infection, consisting of a round, uniformly dark shadow which can be differentiated from that of pulmonary tuberculosis and other pulmonary cysts or tumors. Radioscopy permits visualization of the hydatid cyst in various directions. Roentgen-ray signs show changes in the position of the cystic shadow, which descends during inspiration and regains its original position during expiration. A spherical roentgen-ray shadow during expiration may become oval during inspiration. When the hydatid cyst has been partially, or completely, eliminated by vomiting, the remaining hydatid membranes show a laminar shadow. Another roentgen-ray sign is the visualization of 1 or 2 chambers of air between the hydatid membranes.

Pulmonary echinococcosis can be differentiated from extrapulmonary tumors by a pneumothorax induced with low pressure. Exploratory puncture of the cysts is interdicted in infants and in children. Material eliminated by vomiting should be examined for hooks and scolexes. If the cyst is not vomited up, the treatment is one of surgical removal with enucleation of the cyst and its membranes. Four of the patients were subjected to the operation. Recovery was obtained in 3. The patients are in good health after a follow-up of several years. The 4th patient did not survive the operation.

DERMATOLOGY

Dysproteinemic Purpura of the Hypergammaglobulinemic Type: Clinical Features and Differential Diagnosis. G. W. Hambrick Jr. A. M. A. Arch. Dermat. 77:23-33 (Jan.) 1958 [Chicago].

The author reports a case of primary dysproteinemic purpura of the hypergammaglobulinemic type (purpura hyperglobulinemica of Waldenström) in a 37-year-old woman with the characteristic features of the syndrome. These features included recurrent attacks of a purpuric eruption with numerous pinhead petechiæ and purpuric macules, 2 to 4 mm. in diameter, of a bright red color, scattered throughout a skin with mottled, bronze hyperpigmentation, primarily on the legs; an increase in the total serum globulin, reflecting a great increase in the gamma globulin; a normochromic anemia; and a benign course without recognizable, underlying disease which could account for the hyperglobulinemic state. The histopathological findings showed clearly that extensive vascular injury had occurred. Areas of necrosis observed for the first time represented an advanced degree of damage; they were detected only in serial sections of the skin obtained from the patient's leg 6 days after an attack. The gastrocnemius muscle showed moderately advanced destruction and disorganization, with hyaline replacement of many fibers. The spaces between the muscle fibers were widened by fibrous tissue. Several small areas of acute necrosis were found in serial sections; the adjacent vessels were almost completely obliterated and surrounded by a dense infiltrate. Prednisone therapy, instituted in an effort to reduce the hypergammaglobulinemia, had to be discontinued before adequate trial because of infection. However, during this therapy the purpuric attacks were unchanged, except for alleviation of the local burning pain and tenderness.

Twenty primary or idiopathic cases of this more or less chronic condition and 20 secondary cases in patients with systemic, well-defined diseases, such as cirrhosis of the liver, sarcoidosis, arthritis, systemic tuberculosis, lupus erythematosus, diabetes mellitus, and cardiac disease, were collected from the literature. The main clinical feature of this syndrome is a chronic recurrent, pigmented purpura on the legs after prolonged standing or physical exertion. It affects mostly women. The characteristic laboratory finding is a great increase in the serum gamma globulin with an increased sedimentation rate and without demonstrable disturbance in bleeding mechanisms. There is no known cure for the primary syndrome. Dysproteinemic purpura of the hypergammaglobulinemic type is 1 of 3 types of dysproteinemia, often associated with purpura, bleeding, or both. The other 2 types are cryoglobulinemia and macroglobulinemia. Each is a distinctive syndrome with characteristic clinical and laboratory findings.

The mechanism of the origin of the lesions in dysproteinemic purpura of the hypergammaglobulinemic type remains obscure. A hypothesis taking clinical and histopathological findings into consideration would be that the initial aberration is stasis of blood of an increased viscosity resulting from hypergammaglobulinemia. As a result the walls of the small blood vessels and the capillaries are injured, with subsequent escape of blood. In response to the tissue injury an acute inflammation occurs. The purpuric manifestations have distinctive clinical characteristics, and the differential diagnosis, in addition to the dysproteinemic syndromes, should include the numerous other diseases with purpura, hyperglobulinemia, or a combination of both.

A Psychophysiological Concept of Atopic Eczema. W. B. Guy and R. J. Shoemaker. A. M. A. Arch. Dermat. 77:34-41 (Jan.) 1958 [Chicago].

The authors report on 61 patients with atopic eczema who underwent psychiatric evaluation and individual psychotherapy at the outpatient psychiatric clinic of the University of Pittsburgh School of Medicine and were given skin care and group psychotherapy in the department of dermatology of the outpatient clinic of the University of Pittsburgh Medical Center Hospitals. Atopic eczema (disseminated neurodermatitis) is a psychophysiological skin disorder of complex and incompletely understood etiology. Severe exacerbations of the disease are associated with depression, social withdrawal, masochistic attack on the skin, and a state of relative immobilization. Remissions are associated with increased aggressiveness, increased physical activity, assertion of more personal independence, and restitution of more adequate personality defenses. Behavioral transitions between these 2 polarities are indicative of the trend of the disease and the efficacy of treatment.

Supportive psychotherapy, the technique adapted to the particular needs and special complaints of the patients with atopic eczema, embodies the development of an interpersonal relationship in which the therapist, as a stable object of dependency, supports his patient with the elements of acceptance, reassurance, a certain amount of education, and the opportunity to ventilate feelings. An unhurried, accepting, and interested attitude on the part of the physician is a primary requisite in providing the patients with a suitable setting in which to talk of their interpersonal frictions, their dissatisfactions, and their frustrating life situations. As a development of their opportunity to talk about their feelings, clinical improvement progressed in those patients who were able to establish and maintain actions effecting increased life satisfactions, such as marriage, a job, a move to a new environment, or increased social activity. A number of patients moved from states of relatively helpless, passive, and depressive immobility, associated with exacerbation of atopic eczema, to remission of skin symptoms and improved personal equilibrium. Group psychotherapy proved to be less wearing and more gratifying than individual psychotherapy, and the results were about the same. Group therapy offered the advantages of economy in time and effort for the therapist, of dilution of responsibility through the broad target presented by co-leaders and other patients, and of the patients finding added strength in their mutual identifications.

Reticulohistiocytoma (Reticulohistiocytic Granuloma). H. Montgomery, H. F. Polley and D. G. Pugh. A. M. A. Arch. Dermat. 77:61-72 (Jan.) 1958 [Chicago].

The authors report reticulohistiocytoma in a 24-year-old woman and in a 54-year-old woman. The cutaneous lesions of these patients were associated with severe destructive arthritis, roentgenologically and clinically differing from either psoriatic arthritis or rheumatoid arthritis. The cutaneous lesions involuted in both patients, but the arthritic symptoms and destructive changes in the bones progressed. Biopsy of a specimen from the synovial membrane and the bone from a finger of the older patient revealed the presence of giant histiocytes and histiopathological changes which resembled those in the cutaneous lesions. Reactions to periodic acid-Schiff and to Sudan black B stains were greater in the bone and the synovial membrane than in the skin and were suggestive of the presence of lipofuscin. This, however, may be simply a secondary degenerative phenomenon and not a primary factor. Reticulohistiocytoma is not due to a disturbance in lipid metabolism in the sense that the condition could be regarded as one of the xanthomatoses. The condition is regarded as a definite entity of unknown origin. Why in some patients the disease process should involute spontaneously after mild arthritic changes and in other patients go on to mutilating and destructive changes in the joints and bone remains to be determined.

The Cutaneous Manifestations of the Functioning Carcinoid. R. R. Kierland, W. G. Sauer and W. H. Dearing. A. M. A. Arch. Dermat. 77:86-90 (Jan.) 1958 [Chicago].

The authors emphasize the dermatological manifestations which may arouse suspicion of functioning carcinoid syndrome. Five of 6 patients studied at the Mayo Clinic showed cutaneous flushing of a transient nature as a characteristic symptom. It may persist for as long as 30 or more minutes, although it usually lasts less than 10 minutes. The flush most frequently and severely affects the face, but the entire torso as well as both upper and lower extremities may be involved. The patient frequently states that during an episode of flushing the face and the upper part of the torso feel hot, stiff, and swollen. Paresthesias of fingers may be present. The scleras are reddened. Cyanosis of varying degree may appear in spots in the region of bright red or bluish-red diffuse or patchy flushing. As the flushing continues and becomes more chronic, telangiectases become evident, and more persistent or permanent cyanosis and flush of the face develop. Precipitation of the flush reaction may be spontaneous or may be due to multiple stimuli. Ingestion of food or alcohol, mechanical stimuli as in the administration of enemas, emotional episodes, sudden changes in temperature or normal evacuation of bowel, palpation of the mass, and other causes all may produce flushing.

Laboratory tests are available for confirmation of the diagnosis. It has been shown that Kulchitsky's (argentaffin) cells of the carcinoid tumor secrete 5-hydroxytryptamine and that carcinoid tumors may contain and produce large amounts of the same chemical. It is significant that in 1 of the 6 patients the flushing reaction was reproduced by palpation of the tumor and the intravenous administration of histamine. Also, in this patient values for 5-hydroxytryptamine in the serum were increased after intravenous administration of histamine. Confirmation of the clinical diagnosis may be made by the finding of 5-hydroxyindole acetic acid in excess in the urine.

UROLOGY

The Use of Hypotensive Anesthesia to Control Bleeding During Nephrolithotomy. G. Tomskey, K. Bray and J. Adriani. South. M. J. 51:52-56 (Jan.) 1958 [Birmingham, Ala.].

The authors performed bilateral nephrolithotomy on 6 patients, between 35 and 57 years of age, inducing hypotension during the period that the patients were under anesthesia for control of bleeding. The patients were premedicated with 75 mg. of meperidine hydrochloride, together with 0.4 mg. of atropine, 1 hour before the operation. A 2.5% solution of thiopental sodium was administered until consciousness was lost. Anesthesia was induced and maintained with cyclopropane and oxygen by means of the closed system. Ether was added in the case of 3 patients. Succinylcholine was used to facilitate intratracheal intubation. An intratracheal catheter was used in all patients, because the lateral supine position was necessary for the procedure. A vein was cannulated to be used for a continuous infusion of 0.1% timethaphan camphorsulfonate (Arfonad) for inducing and maintaining hypotension. Arfonad was infused until the blood pressure fell to the desired level, after which the flow was decreased so that the systolic blood pressure was maintained between 80 and 60 mm. Hg. The duration of the hypotension varied from 20 to 30 minutes. Blood was replaced as rapidly as it was lost.

The total average operating time was less than 2½ hours. This is considerably less than it would have been without a bloodless field. The blood loss averaged less than 500 cc. The blood replacement was considerably less than is ordinarily required when tourniquets and clamps are used. At no time were tourniquets and clamps used on the pedicle in any of the patients in this series. Three patients were exceptionally poor risks, and they would not have survived the operation had the technique of hypotension not been used. The postoperative course was uneventful in 4 of the 6 patients. The remaining 2 had a stormy postoperative course, but this was anticipated because they were desperately ill. The use of the technique is justified in patients who require nephrolithotomy and have considerable scarring and fibrosis from previous operations, making exposure and control of bleeding difficult. Hypotension facilitates the operation, reduces blood loss, and decreases the amount of blood which must be replaced.

Phaeochromocytoma of the Urinary Bladder. B. R. B. Lumb and G. A. Gresham. Lancet 1:81-82 (Jan. 11) 1958 [London].

The patient was a woman, aged 48 years, who at the age of 13 had begun to have curious attacks after micturition. As soon as the bladder was emptied, she experienced forcible "thumping" of the heart, a throbbing "bursting" headache, intense pallor of face and hands, coldness of the fingers, and usually sweating. These attacks, which lasted for only a few minutes, took place in summer only, and they ceased with the menarche at the age of 15. However, the attacks reappeared in 1950, when the patient was 41, and they were again confined to the summer months, occurring about 5 times a week. They became more frequent and more severe until, in 1953, they followed every act of micturition and lasted about an hour and a half. The woman was admitted to hospital in January, 1954. Her blood pressure varied from 160/100 to 230/110 mm. Hg, and her basal metabolic rate was +33%. A diagnosis of paroxysmal tachycardia, occurring in a patient with hypertension and mild thyrotoxicosis, was thought likely. She was given 100 mg. of methylthiouracil daily, together with phenobarbitone. She was discharged from the hospital and observed as an outpatient. Attacks occurred during the summer of 1954 but lasted only a few minutes. Treatment with methylthiouracil was continued, later reduced, and then discontinued, but treatment with phenobarbitone was continued.

After April, 1956, there were no symptoms, but in January, 1957, the patient had a bout of hematuria, which led to readmission and cystoscopy. A smooth tumor was seen in the posterior bladder wall above the trigone. It was considered likely to be a pheochromocytoma, and it was excised. Both adrenals were normal, and no other neoplasm was found in the abdomen. The blood pressure, measured throughout the operation, varied from 120/80 to 270/170 mm. Hg. Phentolamine was given intravenously in doses of 5 mg. up to a total of 15 mg. On ligation of the last vein draining the tumor, the blood pressure fell to 100/80 mm. Hg, and an intravenous infusion of arterenol was started; the infusion was adjusted to maintain the blood pressure at about 170/110 mm. Hg for the remainder of the operation. The infusion was stopped 3 hours later, and the blood pressure remained at about 115/75 mm. Hg for the next 12 hours. Next day it was 140/90 mm. Hg, and it remained at, or near, this level until the patient was discharged from the hospital 5 weeks later. She was seen several times as an outpatient in the next 6 months. She has remained free from symptoms and looks well. The clinical history and the demonstration of pressor substances in the urine and in the tumor leave little doubt that the attacks both in childhood and in middle life were due to squeezing of the growth by contraction of the bladder muscles. Quiescence coincided with the menarche, but recrudescence cannot be related to the menopause, which has not yet arrived. Intermittent activity is a characteristic feature of endocrine neoplasms.

Radiation Nephritis. W. M. Levitt. Brit. J. Urol. 29:381-388 (Dec.) 1957 [Edinburgh].

Although warnings were issued by Hartmann and others, of Detroit, about the development of nephritis and hypertension as the result of the exposure of the kidneys to irradiation as early as 1926 and 1927, these warnings remained largely unheeded until Laxton in 1953 presented a detailed study on this problem and described 4 clinical pictures, namely, acute radiation nephritis, chronic radiation nephritis, benign hypertension, and late malignant hypertension. The author presents 2 patients in whom malignant hypertension developed after exposure of the kidney to irradiation. The first was a woman who at the age of 31 was irradiated for an osteogenic sarcoma of the spine, the irradiated region extending from the 9th thoracic to the 3rd lumbar vertebra. An estimated dose of 3,000 r was given over 7 weeks in March and April, 1945. In January, 1946, the patient was readmitted with a typical picture of malignant hypertension. She died on March 15, 1946. At postmortem examination the kidneys were small and remarkably tough. Histologically there was great intimal thickening of the small vessels with marked glomerular damage and tubular degeneration.

The second patient presented is of interest because the irradiation changes were limited to one kidney, and he apparently recovered from his malignant hypertension after nephrectomy. He had received irradiation therapy for a mainly left-sided, upper abdominal secondary deposit from seminoma of the testis. Thirteen years later he began to complain of severe headaches, sometimes with bounding pulse, and visual disturbances. He was known to have had a gradually increasing blood pressure over a period of 3 years. On the basis of functional tests, the diagnosis of malignant hypertension secondary to left-sided renal damage by irradiation was made, and nephrectomy on the left was carried out. The blood pressure remained high for nearly 2 months after the operation and then began to fall, and the fundus picture began to improve about the same time. It is possible that radiation changes in the kidney may be potentiated by a malignant growth which is pressing on or invading the kidney or even by the presence of a malignant growth in the neighborhood of the kidney interfering with its circulation. The possibility of unilateral damage should be considered in every case of radiation malignant hypertension with a view to possible surgical treatment. Repeated follow-up studies should be made of every patient who has been subjected to irradiation of the upper abdomen for the development of nephritis, so that timely treatment may be undertaken.

OPHTHALMOLOGY

Combined Action of Diamox and Potassium Bicarbonate in the Treatment of Chronic Glaucoma. D. A. Campbell, M. Jones, N. E. A. Renner and E. L. Tonks. Brit. J. Ophth. 41:746-758 (Dec.) 1957 [London].

Diamox is known to cause excretion of sodium and potassium cations. The authors called attention previously to the correlation between cation excretion and fall in intraocular pressure after the administration of Diamox. They were interested in discovering whether potassium bicarbonate would have a potentiating effect on the action of Diamox in cases of chronic glaucoma. Whenever Diamox has been used over long periods with success, it has always been employed in combination with miotics. It is highly probable that the latter masked the diminishing effect of Diamox. The authors report on experiments designed to elucidate this point as well as to investigate the effects of the addition of a potassium salt.

The effects of administering a daily dose of Diamox, 250 mg., were examined in relation to the problem of "resistance" to the action of the drug. A diminishing fall in intraocular pressure on successive days corresponded with a decline in the systemic effects of the drug as shown by the changes in the pattern of urinary excretion. The administration of potassium bicarbonate in doses of 1 Gm. 3 times a day, together with 250 mg. of Diamox daily, restored the response and proved effective in controlling the intraocular pressure for a considerable period. It also prevented the occurrence of unpleasant side-effects. This treatment has certain advantages over the use of Diamox combined with miotics, but before it is adopted, investigations should be carried out, while the patient is in hospital, with respect to urinary function, diurnal variation of intraocular pressure, and the response to Diamox and potassium bicarbonate. The intraocular pressure and the blood potassium level should be estimated at regular intervals during treatment. The mechanism of the combined action of Diamox and potassium bicarbonate on intraocular pressure is discussed in relation to systemic effects.

THERAPEUTICS

Pyrazinamide and Isoniazid Regimen in the Treatment of Pulmonary Tuberculosis. F. Sacco, B. Guala, P. Guerra and B. Zucchetti. Gazz. med. ital. 116:464-468 (Oct.) 1957 (In Italian) [Turin].

Thirty-five hospitalized male patients, mostly with bilateral type of pulmonary tuberculosis, of whom 9 had the recent forms and 26 the chronic forms of the disease, have received the combined pyrazinamide-isoniazid medication in daily doses of 250 to 300 mg. of isoniazid and 2.5-3 Gm. of pyrazinamide for a period of 90 to 126 days. Twenty-nine patients had previously received antituberculous drugs, and the bacilli in the sputum proved to be resistant to the streptomycin, aminosalicylic acid, and isoniazid combination. The general state of health was poor in 9 patients, fair in 12, and fairly good in 14. The sputum was positive for Mycobacterium tuberculosis in 20 (56%) patients. Patients with hepatic insufficiency were not included in this series. The drugs were given on 10 consecutive days, followed by an interval of 5 days of rest. The general states of the patients were improved after a few days of treatment. Disappearance of sputum and cough was observed in 2 patients (5.8%), diminution of these symptoms in 9 (24.2%), no change in 20 (59%), and worsening in 4 (11%). Conversion of sputum was observed in 7 patients. Of 5 patients with fever, 4 became afebrile. Gain in weight was noted in 10 (29%) patients. In 33 patients with cavities, healing was observed in 17 and almost total closure in 3. Patients with exudative type of the disease obtained marked improvement from the therapy, whereas those with fibrous type derived only insignificant benefit. Roentgenologic findings revealed definite amelioration in patients with a recent type of tuberculosis who had not previously received other antituberculous therapy. Improvement in general state was not accompanied to the same degree by roentgenologic evidence of improvement in patients with the chronic type of disease. None of the patients manifested any serious organic toxicity. One-half of the patients complained of joint and muscle pain. The therapy was discontinued in 5 patients because of intolerance for the drugs. The authors point out that the efficacy of the intermittent therapy with pyrazinamide-isoniazid in this series proves that this regimen can be used for long periods of time without serious inconveniences.

The Results of Treatment of Psychotic States with Newer Phenothiazine Compounds Effective in Small Doses. D. Goldman. Am. J. M. Sc. 235:67-77 (Jan.) 1958 [Philadelphia].

The author tested 4 phenothiazine compounds, related to chlorpromazine, for their effectiveness in the treatment of psychotic states in significant numbers of patients. Prochlorperazine (Compazine) was given to 667 patients, perphenazine (Trilafon) to 206 patients, triflupromazine (Vesprin) to 176 patients, and a phenothiazine derivative characterized by the presence of a tropic acid complex at the end (Winthrop 13,645-5) to 94 patients. All the patients were confined in a state mental hospital and had chronic psychoses. Most of the patients treated with prochlorperazine received less than 150 mg. per day; most of those treated with perphenazine received less than 65 mg. per day; most of those treated with triflupromazine received less than 300 mg. per day; and most of those treated with the 4th compound received less than 150 mg. per day. In contrast to that, most of the patients treated with chlorpromazine had received more than 300 mg. of the drug per day.

The chief differences between the 4 tested compounds and the previously familiar phenothiazine derivatives, such as chlorpromazine, promazine, and mepazine, were the more intense pharmacological and therapeutic activity, and consequent smaller dosage level, and the much less frequent occurrence of side-effects and toxic complications from use of the drugs. Particularly important was the absence of jaundice after the use of the tested compounds and, in the patients thus far observed, the absence of granulocytopenia. These drugs were also characterized by the production of little or no sedation, in contrast to chlorpromazine and reserpine, but they had much greater beneficial effect on psychotic manifestations, such as delusions and hallucinations and pathological excitement. Allergy-like manifestations, "trophic" and endocrine effects, and neurological effects were recorded as side-effects. The chief neurological effect was Parkinsonism. This disorder of the central nervous system is often (but not always) to some degree a necessary accompaniment of therapeutic benefit in treatment of psychoses, and should be managed by manipulation of dosage and use of benztropine

(Cogentin) methanesulfonate in addition to the active drug. The tested compounds proved to be particularly effective in the treatment of patients with schizophrenia and with manic-depressive psychoses in the manic group; they were also employed synergistically with electroshock therapy in the treatment of patients in the depressed group and were used to treat those with organic delirium. These drugs represent a distinct advance in pharmacological treatment of psychoses.

Probenecid Treatment of Gouty Arthritis. H. M. Svendsen. Tidsskr. norske lægefor. 77:1049-1052 (Dec. 1) 1957 (In Norwegian) [Oslo].

Since gout cannot be controlled by a diet low in purine only and since possible new endogenic formation of uric acid cannot be affected, the possibility of increasing the excretion of uric acid remains. Probenecid is a potent urate eliminant of low toxicity. The clinical effect of the agent in stage 2 is reduction of the frequency and severity of the gouty attacks and prevention of development into stage 3. In stage 3 probenecid not only stops further progression but also brings about decrease in the size of the existing tophi and occasionally their disappearance. The clinical effect of probenecid in stage 2 is usually seen after 2 to 3 months' treatment. In stage 3, with continuous medication, reduction of existing tophi may be expected in from 9 to 18 months. Clinical improvement can in many cases be observed earlier. Probenecid obviates the strict diet which patients with gout had to follow previously, but foods with especially high purine content are to be avoided in all cases. This drug has no value in the treatment of individual acute gouty attacks, which have to be treated specifically with colchicine, phenylbutazone, or corticosteroids. In fact, too large introductory doses of probenecid can for some unknown reason cause acute attacks. Abundant fluid intake and keeping the urine alkaline lessen considerably the risk of renal damage at the start of probenecid treatment. If renal insufficiency is marked, probenecid does not affect the uric acid excretion.

Report is given of 3 patients whose gout was treated with probenecid in 1957, with good results regarding the uric acid excretion and the uric acid concentration in the serum. The practical indications for probenecid treatment depend on age, the stage and development of the disease, and the patient's ability and will power to continue the daily tablet medication for years. All patients in stage 3 should be treated, but those in stage 2 only when attacks of acute gout are relatively frequent and marked or on sign of progression to stage 3. Dosage is individualized. A frequent plan of dosage is to start with 0.25 Gm. of probenecid twice daily for a week, then gradually increase the dosage to 1 to 2 Gm. daily, with control of the uric acid concentration in the serum. On intolerance in the form of gastrointestinal disturbances, the dose may be reduced slightly. There must be abundant intake of fluids, and the urine must be kept alkaline, as with 5 Gm. of sodium bicarbonate daily.

Intra-arterial Treatment of Obliterating, Peripheral Arteriopathies with Curare. G. Enria. Minerva cardioangiol. 5:461-463 (Oct.) 1957 (In Italian) [Turin, Italy].

The author believes that the intra-arterial route is the most efficacious for the administration of vasodilator and sympathicolytic drugs in the treatment of peripheral arterial and arteriolar disease. Tubocurarine chloride therapy, alone or in conjunction with other medical or surgical treatment, was practiced in the case of 370 patients with arterial disease in a dosage of 30 to 40 mg., divided into single doses of 3 to 6 mg., during a period of 10 to 20 days. The method of injection was such as to concentrate the effect of the drug in the sections of the arteries most affected by the disease and thus minimize and retard the flow of the drug into the general circulation. Patients with acute, progressive type of arterial disease were not included in this series. Excellent results of tubocurarine chloride therapy were observed in 89 patients (24%), good and long-acting results in 120 (32.5%), fair results in 43 (11.5%), and temporary results in 37 (10%). There were 81 therapeutic failures (22%). The greatest benefit from this medication was derived by patients who had one of the following conditions: arteriopathy in an older person, thrombotic angiopathy, vasospasm, or segmentary obliterating embolism. Patients with nonacute thromboangiitis and migrating phlebitis presented inconsistent results, which included some of the best in the series and many that were not impressive. Patients with Raynaud's disease were the least responsive to the administration of tubocurarine chloride. Tubocurarine chloride therapy produced no manifest untoward or cumulative side-effects, although this series included several patients with coronary disease and myocardiosis.

The experience with this series demonstrates that tubocurarine chloride affords long-acting benefits (6 to 8 months). Its effects are apparently better and more durable when they do not manifest themselves promptly at the onset but rather in the course of, or after withdrawal of, the therapy. Tubocurarine chloride given endarterially reinforces the subjective, and sometimes also the objective, therapeutic improvements due to lumbar sympathectomy.

PATHOLOGY

Hamartoma of the Lung. F. V. Hodges. Dis. Chest. 33:43-51 (Jan.) 1958 [Chicago].

Of 200 cases of hamartoma of the lung collected from the world literature, 33 were of the endobronchial type; the tumors were in the lung parenchyma in the remaining cases. These tumors were discovered in surgical pathological specimens and at autopsy. They seldom gave rise to symptoms. The increased incidence of hamartomas in recent years is a reflection of the more frequent routine roentgenologic examination of the chest. The appearance of hamartoma on the roentgen-ray film frequently simulates that of chronic granuloma or malignant neoplasm, although the tumor itself rarely, if ever, becomes malignant.

The author reports 9 new cases of hamartoma of the lung, in 6 women and 3 men between 56 and 93 years of age. Seven hamartomas were observed among 10,107 autopsies performed at Wayne County General Hospital, Michigan, during the past 24 years, representing an incidence of 0.069%. The 2 other hamartomas were surgically removed during the latter part of the same period. The tumor was seen on chest roentgenograms in 3 patients and was thought to be either a Ghon tubercle or a malignant tumor. Failure to visualize the tumor on the roentgenograms of the 6 other patients may be attributed either to its small size or to its obscurement by other pathological alterations in the lung or pleura. Histopathological examination revealed that the tumors arose from the connective tissue of the bronchial wall and expanded outward into the lung parenchyma as well as inward into the bronchial lumen. All the hamartomas were associated with an infiltration of chronic inflammatory cells, and many were found adjacent to areas of chronic pneumonitis and fibrosis. The possibility is suggested that in some cases chronic inflammation may be a factor in formation of pulmonary hamartoma.

Acquisition of Staph. Aureus by Newborn Babies in a Hospital Maternity Department. J. Cook, J. A. Parrish and R. A. Shooter. Brit. M. J. 1:74-76 (Jan. 11) 1958 [London].

The authors carried out an investigation among full-term newborn and breast-fed babies in 2 infants' nurseries of St. Bartholomew's Hospital in London in an attempt to trace some of the normal routes of spread of staphylococci. In this investigation they excluded, in turn, each component of the infants' environment which might be responsible for contamination with staphylococci. Initially, 53 infants were all found to be nasal carriers of Staphylococcus pyogenes var. aureus by the 10th day, and 11 out of 12 of these infants also carried staphylococci in their stools. Examination of bedding suggested that this was not the immediate source of staphylococci. Prevention of possible contamination from the attendants' hands by the use of chlorhexidine (Hibitane) handcream or from their clothing by having the nurses wear gowns over their usual uniforms during the toilet of several babies made little difference.

The use of a triple dye, containing brilliant green, proflavine hemisulfate, and crystal violet, for painting on and around the umbilical cord at birth and thereafter every morning until separation took place, and of individual nurses' gowns confined to one infant, both as separate and as combined measures, produced a reduction in the nasal carriage rate among infants on the 12th day of life by about 25 to 30%. It suggested that perhaps about 75% of the infants acquired their staphylococci in some other way than direct from their attendants. This route has not yet been identified. Twenty-two colonies of Staph. aureus isolated from a total of 420 cu. ft. (11.9 cu. m.) of air examined in the course of 8 months suggested that aerial spread may have played a significant part in the dissemination of staphylococci in the nurseries. No evidence was obtained that infants gained staphylococci from their mothers, but there was evidence that staphylococci on the mothers' breasts came from their infants.

Masking and Gowning in Nurseries for the Newborn Infant: Effect on Staphylococcal Carriage and Infection. J. O. Forfar and A. F. Maccabe. Brit. M. J. 1:76-79 (Jan. 11) 1958 [London].

The authors carried out a controlled trial in 2 nurseries of a 50-bed maternity unit over a period of 3 months with the object of determining the effectiveness of masking and gowning by attendants in reducing staphylococcic infection of and carriage among newborn infants. A strict masking and gowning regimen was employed in one nursery (the "masked" nursery) but not in the other (the "unmasked" nursery). In the course of the trial 82 infants were admitted to the masked nursery and 85 to the unmasked nursery. Twenty-two (27%) of the 82 infants and 27 (30%) of the 85 infants had minor staphylococcic infections, the infection rates in the 2 nurseries being practically the same. The sites of the occurrence of these infections were the eye and the skin predominantly and also the umbilicus. Between the 2 nurseries there was no significant difference as to the site of infection.

The carriage rate for staphylococci among infants in the 2 nurseries was determined by examining swabs from the eye, nose, and umbilicus. The carriage rate for staphylococci among the attendant nursing personnel was determined by nasal swabbing. There was no significant difference in the carriage rates for infants in the masked and unmasked nurseries or between the infants and the attendant personnel. There was no significant difference in the drug-sensitivity pattern of staphylococci isolated from infants in the 2 nurseries, but there was a significant difference in pattern between infants' and nurses' staphylococci. These observations suggest that direct transfer of staphylococci from the nose and mouth of attendant personnel to the infants is not an important means of infection of the latter, and that masking and gowning in maternity nurseries is unlikely therefore to be an effective preventive measure.

BOOK REVIEWS

Allergy in Pediatric Practice. By William B. Sherman, M.D., Associate Clinical Professor of Medicine, Columbia University College of Physicians and Surgeons, New York, and Walter R. Kessler, M.D., Ph.D., Instructor in Pediatrics. Columbia University College of Physicians and Surgeons. Cloth. $9.25. Pp. 296, with illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1957.

In the preface, the authors say that this book is intended to offer to general practitioners and pediatricians without special training in allergy practical aid in the diagnosis and treatment of the allergic diseases. The book has succeeded admirably in attaining this goal. It is a practical textbook with sufficient coverage of immunological and other basic principles to furnish a rational understanding of the management of allergy. The authors have been conservative and down to earth. In fact, at times their conservatism has led them to lean backwards, as in the case of their failure to mention the growing experience with insect dusts as a common inhalant cause of asthma and hay fever. This book can be recommended not only to pediatricians but to any physician interested in a sane and practical exposition of allergic disease.

Artificial Limbs. By Leon Gillis, M.B.E., M.B., B.Ch., Professor and Arris and Gale Lecturer, Royal College of Surgeons, England. With foreword by Sir Harry Platt, LL.D., M.D., M.S., President, Royal College of Surgeons. Cloth. £15. Pp. 449, with illustrations. Pitman Medical Publishing Co., Ltd., 45 New Oxford St., London, W. C. 1, England, 1957.

The author has produced an extensive work on the postoperative management of the amputee, including preparation for limb fitting, description of procedures for limb fitting, training of the amputee, and, finally, his vocational and social rehabilitation. The author emphasizes the physician's responsibility in guiding and working with the other members of the team as essential in attaining maximal rehabilitation. The sections pertaining to postoperative exercise programs and training for persons with lower extremity amputations are complete and practical. The training of those with upper extremity amputations in England is assumed to be the duty of the limb fitter. The advisability of this arrangement may be questioned. The sections on the construction and fitting of artificial limbs for the upper and lower extremities deal primarily with the techniques used in England and especially at Queen Mary's Hospital. The limbs, elbow and knee mechanisms, foot and ankle mechanisms, and terminal hooks and hands which are described and illustrated are apparently those now in use in England. Only brief reference is made to the quadrilateral suction socket for above-knee amputations, which is increasing in popularity at amputation centers in the United States. The basic hooks and the increasingly successful Army Prosthetic Research Laboratory (APRL) hook and hand used in the United States are not mentioned. Some intriguing arrangements for prostheses for quadrilateral amputees are shown. An extensive bibliography follows each chapter, but rarely is specific reference made to a bibliographic listing. The book is well illustrated. Since it deals primarily with types of prostheses not currently in common use in the United States, it will have little appeal or would be of only limited value to physicians, prosthetists, or others concerned with the rehabilitation of amputees in the United States, but, those in other countries may find in it much of value.

Urine and the Urinary Sediment: A Practical Manual and Atlas. By Richard W. Lippman, B.S., M.D. Second edition. Cloth. $8.50. Pp. 140, with 97 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1957.

This neatly printed volume is divided into three chapters. The first chapter discusses such more common urinary findings as proteinuria, casts, erythrocytes, leukocytes, epithelial cells, bacteria, and parasites. Proteinuria usually indicates a renal lesion, but benign proteinuria (orthostatic, postural, or that associated with drugs or fever) may not cause permanent renal damage. Bacterial infections may produce 2-5 Gm. of protein in 24 hours, while degenerative tubular lesions allow the excretion of 7 Gm. or more in 24 hours. Chapter 2 reviews the urine and sediment findings in local and generalized diseases. It is emphasized that the urinary findings should not be separated from the clinical information. Proteinuria and urine sediment reflect a pathological process, such as inflammation, degeneration, or an anomaly. Chapter 3 reviews the more common laboratory urine examinations. The method of collecting and the immediate examination of clear urine specimens is adequately covered. A review of the Addis count is clear, concise, and practical. The technique for examination of fresh sediment and stained smears presented is useful. On page 27, the author says, "Squamous cells in the male urine result from cystitis." He should have had added urethral stricture as a common cause. On page 98 it is recommended that men, aged 50, be catheterized for residual urine on their first visit. Virgin catheterization in men can invite untoward symptoms and complications. There are 92 color photographs of urinary sediment which enhance the teaching value of the book. This textbook should be on the shelf of every practicing physician, medical student, and laboratory technician.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

QUESTIONS AND ANSWERS

FOODS FOR CHILD WITH DIARRHEA

To the Editor:—*Please comment on foods for a one-year-old child who has diarrhea.*

J. P. Gibson, M.D., Abilene, Texas.

Answer.—The use of foods during and immediately after an episode of diarrhea is dependent on the duration, severity, and any previous history of recurrent diarrhea or food intolerance. Relatively mild, simple, acute diarrhea frequently is managed by feeding the infant boiled skimmed milk until the diarrhea improves. Simple foods, such as fruit or vegetable juices, ripe banana, scraped ripe apple, strained meats, or cottage cheese, can then be cautiously offered for a day or two before gradually reintroducing the regular diet. In the presence of fever and irritability, older infants and small children often will tolerate carbonated beverages, diluted fruit juices, and sherbet alternately with the boiled skimmed milk.

Diarrhea of intermediate severity often can be treated with orally given fluids if the condition of the patient is watched carefully. A simple solution of known composition may be prepared by using packets containing 1.7 Gm. of sodium chloride and 2 Gm. of potassium bicarbonate. One packet, when added to 1 qt. of water, provides a solution containing 30 mEq. of sodium, 20 mEq. of potassium, and 30 mEq. of chloride. The addition of 3 tablespoonfuls of corn syrup to this will provide approximately 5% carbohydrate. The gradual introduction of foods as suggested above is advisable when the diarrhea has improved. Skimmed milk and diluted orange juice, for example, will replace sodium and potassium, as well as water. Excessive use of water or fluids, such as tea or carbonated beverages, will not replace sodium or potassium losses and are not the best solutions if treatment is prolonged for several days.

If the diarrhea is severe or prolonged to the point of moderate dehydration or if it is associated with vomiting, the best treatment is to give no feedings and to correct the water and electrolyte deficits with intravenously given fluids in the proper amounts. Oral feeding should be reintroduced cautiously. Occasionally, dilute boiled skimmed milk will not be well tolerated. In such cases it is better to feed a hydrolyzed protein food for several days and then gradually introduce the boiled skimmed milk and other foods.

TATTOOING AND REMOVAL OF TATTOOS

To the Editor:—*Please give information on the following questions: What is the exact method, past and present, of producing tattoos in humans? Is there any variation in technique of individual operators or according to body regions? What chemicals are utilized as pigments? Is there any standard chemical grade or pharmaceutical purity? In the removal of tattoos, what methods or techniques have proven useful? Are there any elective differences according to the type of tattoo or its location? Briefly, what is the chemical reaction involved, if any? In practical use, what techniques are preferable?*

Frank E. Halstead, M.D., Wyalusing, Pa.

Answer.—The complete answer to these questions are beyond the scope of this column. Professional artistic tattooing has been practiced as far back as 2000 B.C. in Egypt and 1100 B.C. in China. It is performed all over the world with various techniques, pigments, and degrees of asepsis. The procedure may be performed with a variety of apparatus, varying from a single needle or row of needles inserted manually through a pigment applied to the skin to rather complex machines, including flexible shaft machines. According to Schmidt (*A. M. A. Arch. Dermat. & Syph.* 64:210, 1951), most tattoo "artists" construct their own machines from brass tubing and needle rods attached to the clapper arm of a small doorbell electromagnet operated through a transformer. Obviously, such a home-made apparatus can not lead to consistent changes or results.

There is marked variation in the techniques of different operators. However, for individual tattooers there is less variation in different areas of the body except in the depth at which the pigment is deposited. Obviously, one can not penetrate as deeply on the back of the hand or on the eyelid as one can on the thigh. There is no standard chemical grade or pharmaceutical purity utilized in this technique. Conway (*J. A. M. A.* 152:666-669 [June 20] 1953) recommends the following chemicals to produce the colors in therapeutic tattooing: white, titanium dioxide; yellow, yellow ferric oxide; red, mercuric sulfide (cinnabar); blue, cobalt; black, black iron oxide or carbon; and green, chromium oxide.

The best method of removal is excision. If the tattoo is too large for primary closure after simple excision, the removal may be accomplished by excision and suturing in stages, by excision and grafting, or by the use of a Z-plasty. There are many

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other methods, including tattooing of flesh-colored pigments into the decoration, tattooing silver nitrate and tannic acid into the lesion, and planing. Planing has not been particularly successful. Hypertrophic scarring has followed this procedure in many cases because of the depth of the pigment in the corium, requiring deep dermabrasion for removal. If applicable, the preferred method is excision; the others are partially successful only. Scarring is to be expected after the removal of a tattoo, regardless of the method of eradication employed.

ERRONEOUS BLOOD PRESSURE READINGS

To the Editor:—*Please give information on the technique of taking arm blood pressures in individuals who are obese. A patient whose upper arm measures 20 in. in circumference shows a reading of 240/140 mm. Hg when a standard cuff, 5 × 9 in., is used but 160/80 mm. Hg when a leg cuff, 7 × 14 in., is used. Have any tabulated evaluations been made on the limits of error in the use of the smaller cuffs on a large arm? At what point, as far as girth of the arm is concerned, would one switch to a leg cuff to obtain a more accurate blood pressure recording?*

M.D., Ohio.

Answer.—The apparently inaccurate blood pressure reading of 240/140 mm. Hg in this obese patient may have been due to inability to wrap the cloth around the bag so that it fitted snugly throughout the entire width of the bag. Often in arms of this size there is not enough cloth, so that the inflated bag protrudes above and below the cuff giving, in effect, the original narrow blood pressure cuff which was later found to result in inaccurate (usually high) readings. However, it was shown by Trout and others (*J. A. M. A.* 162: 970-971 [Nov. 3] 1956) that a layer of flabby fat giving an arm circumference of 28 to 36 cm. can be responsible for an error of 20 mm. or more in systolic reading. This error is usually higher but occasionally may be lower than the actual reading, despite the fact that the cuff was completely covered by the wrapping cloth. These observers found that this same error was not obtained in arms of 35 cm. in circumference when the size was due to muscle mass with only a normal layer of subcutaneous tissue. By comparison with direct radial artery blood pressure determinations (cannula and strain gauge), they found that by placing the cuff on the forearm of the obese patient more accurate readings could be obtained. Auscultation was over the radial artery. It has been found that increasing the width of the cuff does not eliminate the error in the obese patient. Therefore, using the leg cuff in these patients would appear to have no advantage, although the experience mentioned in the inquiry would seem to deny this.

The blood pressure in a normal individual, taken in the recumbent position, should be approximately the same in both femoral and brachial arteries. Taken in the upright position, systolic pressure in the femoral artery increases from 50 to 60 mm. Hg, which is equivalent to the pressure of an imaginary column of blood from the femoral artery to the heart. It is pointless to determine blood pressure by palpating for the pulse. The systolic reading is inaccurate, and diastolic pressure cannot be determined by this method. There should be no great difficulty in auscultating the popliteal or dorsalis pedis artery.

OBSTETRIC PARALYSIS

To the Editor:—*What is the latest and best treatment and prognosis of Erb's obstetric paralysis?*

M.D., Illinois.

Answer.—Obstetric paralysis may involve the upper arm and is then known as the Erb-Duchenne type; in the lower arm it is known as the Klumpke type; it may involve the whole arm when the extremity is frail and anesthetic. In a few cases there is an injury of the shoulder as well as of the brachial plexus. The upper-arm type is much more common than the others. Treatment should be begun as soon after birth as possible. This is best accomplished by fitting the infant with a splint which maintains the shoulder in abduction and external rotation, the elbow in 90 degrees of flexion, the forearm in supination, and the wrist in dorsiflexion (the Statue of Liberty position). The splint should be removed at least twice daily and the joints of the extremity carried through a full range of motion. Active exercises are encouraged at each removal of the splint. Use of the splint should be continued at all other times until the patient can actively elevate the arm from the splint and can actively flex the elbow and the power of the external rotators can balance that of the internal rotators. Even then, use of the splint should be continued at night until recovery is advanced and there is no further tendency for the development of fixed contractures. The passive exercises should be continued until such time as the child is old enough to carry out a completely active program.

Most cases of obstetric paralysis appear severe at first but the infants rapidly recover, some in one to three weeks. The majority recover in three to four months, some in eight. If recovery has not occurred when the child is aged 6 months, there will usually be some residual partial disability. The presence of an associated Horner's syndrome usually signifies an avulsion injury and, consequently, a bad prognosis. If there is no evidence of beginning recovery by the end of three months, it may be advisable to consider surgical exploration of the brachial plexus with the idea of performing neurolysis or repair. With few exceptions, most authorities feel that surgery is usually of no avail in the early stage of treatment. Surgical procedures to correct residual deformities are indicated in some at the preschool age or later.

GEOGRAPHIC DISTRIBUTION OF GOITER

To the Editor:—*A surgeon in the Veterans Administration Hospital in Big Spring, Texas, would like to know why the state of Wisconsin is called the goiter belt of the United States. Obviously, lack of iodine in the water contributes to a great incidence of goiter in Wisconsin; however, since most of the water comes from Lake Michigan, why is there not as large an incidence of goiter in the Chicago area as in Milwaukee, which is scarcely 80 miles from Chicago?* *M.D., Texas.*

Answer.—The so-called goiter belt of the United States includes all areas where the soil and water contain limited amounts of iodine. The principal endemic areas have been the Great Lakes basin and the Cascade Mountain region. In more recent years, modern transportation facilities and their impact on food distribution, the more extensive use of fertilizer, the increased use of sea food, and the advent of iodized salt have changed the goiter and iodine picture immensely. Since there is an appreciable time lag between the ingestion of iodine deficient food and water and the development of simple goiter, the iodine water supply values as observed years ago and the incidence of goiter in school children have been checked. Chicago and Milwaukee were in the same range. Both had appreciable incidences of goiter, but neither had as much as did some other communities.

CHEMICAL COMPOSITION OF SCALP OIL

To the Editor:—*What is the chemical composition of the natural oil secreted by the scalp?*

Donald S. Williams, M.D., Marietta, Ohio.

Answer.—The chemical composition of the scalp surface fat is quite complex. In general, it contains free (nonesterified) fatty acids and fatty acids esterified with cholesterol, with wax alcohols, and with glycerol. In addition, it contains hydrocarbons (including squalene) and cholesterol in a free state. There are also present slight traces of nitrogen, phosphorus, and other substances as yet unclassified as to significance.

BILATERAL OVARIAN CANCER

To the Editor:—*Discussion of several recent cases of ovarian carcinoma with gynecologic colleagues could not adequately explain the frequent occurrence of bilateral disease without obvious involvement of intervening structures or peritoneum. Is such an explanation available?*

Jean P. Papps, M.D., Forest Hills, N. Y.

Answer.—There are no fully accurate data on bilateral primary occurrences of ovarian cancer, but there are suggestions that such may be in the range of 40% or more.

AUTOPSY AND EMBALMING

To the Editor:—*Undertakers state that autopsies performed after embalming enable them to do a better job with less difficulty than if performed before embalming. Some pathologists say this practice does not interfere with interpretation of their findings and adds some degree of protection when the hazard of contagion is present. Are these valid arguments in support of this practice?* *M.D., Pennsylvania.*

Answer.—Solutions used for embalming purposes change the color and texture qualities of tissues such that many details of their gross structure are lost. Death from blood clot embolism and from many other causes is distinguished with difficulty in bodies that have been embalmed. Chemical analysis of tissues for many poisons, even alcohol, and bacteriological studies for infections have no value. Foreign material placed in the body cavities for absorbing moisture confuses the examination.

DETERMINATION OF 17-HYDROXYSTEROIDS IN URINE

To the Editor:—*Is it possible for a small laboratory (please consider separately a small hospital's laboratory and a doctor's office) to perform determination on urinary 17-hydroxysteroid? If so, what is the simplest and easiest test?*

I. E. Cooper, M.D., Staten Island, N. Y.

Answer.—The determination of the content of 17-hydroxysteroid in urine should not be undertaken in a physician's office. It is doubtful if any small hospital's laboratory can satisfactorily perform such an analysis. The equipment and the technical skill with which to perform this determination are almost never to be found in a small hospital's laboratory. If the inquirer will consult the method as reported by Daughaday and others (*J. Clin. Endocrinol.* 8:166, 1948), the validity of the opinion expressed above will be evident.

SOCIAL SECURITY FOR MILITARY PHYSICIANS

To the Editor:—*A physician serving the obligatory two years of service with the U. S. Air Force is concerned with the social security program and its provisions for military physicians. The physician, while in the military service, pays almost $100 a year into the social security program. Is there any way that these payments can be deducted from income tax payments or any means to avoid payment into the program at all?*

M.D., New York.

Answer.—All members of the Armed Forces on active duty are required to pay this tax. There is no way that this tax may be deducted from income tax, and there is no way to avoid payment as long as the individual is on active duty.

SYMPTOMS FROM LOW BLOOD SUGAR LEVELS

To the Editor:—*In regard to the question, "What is the mechanism of the nervousness produced by a drop in blood sugar level?" in the Jan. 25, 1958, issue of* The Journal, *page 430, the answer might be considered inadequate since it does not mention epinephrine secretion. In 1924, Cannon demonstrated in cats the reflex secretion of epinephrine from the adrenal medulla in response to hypoglycemia. This has since been confirmed in human beings by detection of catecholamines. The subject is also discussed in the paper by myself and Ralli* (Am. J. Med. 20:631, 1956). *The patient there described had the classic tachycardia and rise in blood pressure when the "true" blood glucose level dropped below 60 mg. per 100 cc. and subjective symptoms when the level was less than 38. The literature is confusing on the relationship of the blood glucose level to symptoms, since this level may not have been properly determined or symptoms may have persisted for varying periods when the level was determined. It must also be remembered that when the blood glucose level remains low for a long time all tissues become depressed and unreactive.*

Herbert Gershberg, M.D.
New York University College of Medicine
550 First Ave.
New York 16.

The above comment was referred to the consultant who answered the original question and his reply follows.—Ed.

To the Editor:—*The mechanism of the nervousness produced by a drop in blood sugar level is complicated, as indicated by experimental, physiological, and pathological observations on animals and on normal human beings. Variations in response to low blood sugar levels may depend on differences in the patient's own nervous system and even on genic differences. The reflex secretion of epinephrine from the adrenal medulla in response to hypoglycemia as demonstrated by Cannon in 1924 is accepted as the explanation of the tachycardia and elevation of blood pressure with a low blood sugar level. They are striking when they occur at a given level and are followed by such symptoms as hunger, fainting, and sweating as the level falls still further. They vary markedly with individuals. Thus, authentic records exist in which a patient has been free from symptoms when the true glucose level in the blood was nearly zero. One important problem at present depends on the change in response to insulin hypoglycemia seen in certain patients who, after having taken insulin for many years, may become unconscious in hypoglycemia without any of the warning symptoms of the adrenal type. Certain strains of mice have a genetically determined inborn error of cerebral metabolism, which expresses itself as a susceptibility to convulsive seizures. Some diabetic patients show changes in the encephalogram associated with a susceptibility to severe reactions to low blood sugar values.*

The rate at which the blood sugar level falls determines, in many patients, the development of symptoms. Thus, the reactions which follow the use of rapidly acting insulin are frequently accompanied by sympathetic nervous system symptoms and notable increases in pulse rate and blood pressure. Frequently, symptoms of this type and, also, hunger, faintness, and sweating are singularly absent in patients in whom hypoglycemia follows the use of protamine zinc insulin or other long-acting insulin preparations. Symptoms depending on changes in the central nervous system, including disturbances of speech, mask-like facies, twitching, double vision, loss of reflexes, positive Babinski's signs, and the psychic manifestations with loss of consciousness, stupor, catatonia, violence, or depression seem clearly related to the extent of the cerebral damage dependent on the severity and duration of hypoglycemia and probably the associated anoxia. According to Himwich, the first parts to suffer from sugar deprivation are, phyletically speaking, the newest portions of the brain, the cerebral hemispheres, and parts of the cerebellum. Then, in turn, each succeeding lower portion of the brain becomes involved.

MANAGEMENT OF NEWLY DEVELOPED TUBERCULIN TEST REACTION IN A CHILD

To the Editor:—*In the query on the management of newly developed tuberculin test reaction in a child* (J. A. M. A. 166:311 [Jan. 18] 1958), *I would indorse the excellent discussion of the problem, but, because of the undoubted presence of live tubercle bacilli in the tissues of this child and the possibility that hematogenous dissemination may occur, I believe that the use of isoniazid, which readily permeates all tissues, passes through the cellular membranes, and enters into the cell to alter and inactivate the tubercle bacillus, would seem indicated.*

J. J. Kirshner
Eagleville Sanatorium
Eagleville, Montgomery County, Pennsylvania

The above comment was referred to the consultant who answered the original question, and his reply follows.—Ed.

To the Editor:—*Until more evidence is available, antituberculosis drugs should not be given to any person over 18 months old who, on first examina-*

tion, presents a tuberculin reaction. In such cases there is a possibility of the lesions having been present long enough to have lost their blood supply, and there is no evidence that these drugs will penetrate large areas of necrotic avascular tissue in sufficient concentration to suppress tubercle bacilli. Antituberculosis drugs were used in some persons who had recently converted, a few of whom later reverted. This kind of work, however, is all so recent that no valid conclusions can be drawn as to the effectiveness of present drugs under such favorable conditions with reference to the drugs reaching all tubercle bacilli.

In recent tuberculin converters and in those who may have converted many months or even years before they are discovered, such as the 4-year-old boy under consideration, there is no good evidence that drugs destroy the tubercle bacilli. There is good evidence that they markedly suppress active and multiplying tubercle bacilli which may regain full activity after the drugs are withdrawn. It is unfortunate that tubercle bacilli often become resistant to antituberculosis drugs, particularly, when only one, such as isoniazid, is given. If these resistant organisms, after they revive from a period of suppression, should result in acute or chronic clinical tuberculosis, drugs to which they are resistant would be of no value. No one knows through how many generations of tubercle bacilli the resistance to drugs may continue. Until this is known, it would seem safer to refrain from the general use of drugs in persons who have tuberculous lesions as manifested by the tuberculin reaction but have no demonstrable progressive clinical disease. It may be argued that, as long as only one drug is used, one still has streptomycin and aminosalicylic acid in the event clinical disease subsequently develops. This seems to be good reasoning, but one occasionally encounters a patient who, for one reason or another, does not tolerate either of these drugs. There is still the possibility of resorting to such drugs as viomycin, pyrazinamide, and cycloserine. Until the value of drugs in recent converters and in those who may have been infected months or years before detection is well documented, it seems preferable to limit the use of these drugs to special study groups.

TREATMENT OF LOCALIZED ARGYRIA

To the Editor:—*In the reply to a query on the treatment of localized argyria in* The Journal, *Jan. 11, 1958, page 201, the method advocated by Dr. Lawless and myself was correctly described except in one respect. The ferricyanide and thiosulfate are dissolved in sterile distilled water in sterile beakers, but the two salts are not sterilized nor are the solutions sterilized. This would destroy the efficacy of the mixture. The mixture is evidently antibiotic, for neither of us has ever seen infection follow its use. It is also bland, even when it spurts into the eye of the operator through a hair follicle.*

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EXPLOSION HAZARD IN THE RECOVERY ROOM

Several letters were received on contradictory statements in the answer on "Explosion Hazard in the Recovery Room" which appeared in Questions and Answers, The Journal, Feb. 8, 1958, page 711. These were brought to the attention of the consultant who prepared the reply to the original inquiry, and he has written a further reply, in part, as follows.—Ed.

To the Editor:—*The article was misquoted. The booklet in question is Safe Practice for Hospital Operating Rooms, booklet no. 56, not booklet no. 6. In a hospital postanesthesia recovery room, the usual precautions pertaining to explosion and fire hazards due to the presence of oxygen and, occasionally, ether, alcohol, and acetone should be observed. If the room is used only, as stated, as a postanesthesia recovery room, the precautions should be those of any area where there are potential hazards as mentioned. The statement in the book reads, "Postoperative recovery units which are not immediately adjacent to anesthetizing locations and in which the use of combustible anesthetic agents is prohibited are not considered to involve explosion hazards and therefore do not require the installation of static dissipation systems nor explosion-proof equipment required for explosive atmosphere." Second, there is no known report of explosions due to anesthetic agents occurring in a postoperative area. Third, the attire of the personnel should be the same as that for operating room personnel, that is, they should be properly capped and gowned and observe all of the necessary precautions to combat explosion and infection hazards. The Joint Commission on Accreditation of Hospitals, in surveying hospital postanesthesia recovery rooms, is reported to have found that nearly half of them are used as induction rooms also; for this reason and under these circumstances, every precaution taken to prevent operative explosion hazards should be taken in the recovery room. This dual function would support the statement that the technique should be the same.*

WASHINGTON NEWS

FROM THE WASHINGTON OFFICE OF THE AMERICAN MEDICAL ASSOCIATION

A.M.A. Favors Federal Grants for Medical Schools . .
Senate Votes Loan Bill for Public Works . .
Hill-Burton Increase Asked by Hospitals . .
National Health Survey on Doctor Visits . .

A. M. A. SUPPORTS U. S. GRANTS FOR MEDICAL SCHOOL CONSTRUCTION

The American Medical Association is supporting legislation for federal grants to help pay for construction and equipment of medical schools. The Association's position was outlined in a letter from A. M. A. General Manager F. J. L. Blasingame to Chairman Oren Harris (D., Ark.) of the House Committee on Interstate and Foreign Commerce, which has just concluded two days of hearings on three bills in this field.

While approving the plan for one-time "bricks-and-mortar" grants, Dr. Blasingame said the association was opposed to an incentive proposal that would give schools a higher percentage of federal funds if they would increase their freshman classes by 5%.

The letter first points out that the Association has been interested in medical education since its founding more than 100 years ago and has been "actively and effectively engaged in the improvement of medical education." It cites the A. M. A. Committee on Education, which functioned for 57 years before formation of the present Council on Medical Education and Hospitals.

On the broad issue of aid to medical schools, Dr. Blasingame declared: "Generally, the American Medical Association is opposed to federal aid in those areas where private citizens and local communities are capable of providing for themselves. We believe federal aid to be a dangerous device because of the degree of control and regulation which must necessarily accompany federal funds.

"We believe, however, that there is sufficient need for assistance in the expansion, construction, and remodeling of the physical facilities of medical schools to justify a one-time expenditure of federal funds, on a matching basis, provided, of course, that maximum freedom of the schools from federal control is assured."

Regarding the bonus for increasing enrollment, provided by one of the bills under consideration, Dr. Blasingame's letter states:

"There are a number of features of H. R. 7841 which in our opinion, if adopted, would be detrimental to medical education. First, we are concerned that the bill would needlessly establish a precedent for urging or inducing medical schools to increase their enrollment more rapidly than is justified by their facilities, personnel, and teaching material.

"Without an analysis of each individual school, it is quite possible that a 5% increase in freshmen enrollment at the present time would be detrimental to the quality of medical education or that such an increase in succeeding years would be unwise. We feel obligated to point out the dangerous principle which would be established and to urge the Committee to remove this unnecessary feature from the bill. We are certain that schools capable of increasing enrollment will do so without prompting."

Three suggestions were made to the committee regarding amendments:

1. The Association has no objection to federal grants greater than 50% of the cost of a project, provided there is no financial incentive to increase enrollment. "The position of the American Medical Association is only that there should be some matching of federal funds by the recipient school."
2. Congress should spell out in detail the composition of a federal council proposed to advise on the program, specifically providing that six members "be selected from among leading medical authorities and that the public members include persons skilled in the broad aspects of engineering, education, finance and architecture."
3. The definition of "medical schools" in all three bills should be changed to eliminate schools of osteopathy from benefits. "Osteopathy is not a part of medicine but rather is a cult, the tenents of which are based on unscientific principles. . . ."

Dr. Blasingame noted that "these bills specifically state that the program would not authorize federal control over curriculum, administration, methods of construction, or personnel."

NONPROFIT HOSPITALS MAY GET LOANS

Private as well as public hospitals would be eligible for 3.5% 50-year loans from the federal government under the antirecession Community Facilities Act recently passed by the Senate and pending in the House. Until Senator Watkins (R., Utah) proposed the amendment, loans would have been limited to public hospitals. The Watkins amendment provides that any loan for additions, renovation, or modernization of a nonprofit private or public hospital be certified by the Surgeon General of the Public Health Service and the state Hill-Burton agency.

Debate in the Senate also drew out the fact that loans could be made to public-owned colleges as well as schools. This would include public medical schools. The act has been pushed by the Democratic leadership as another means to combat the recession.

AHA ASKS SENATE FOR INCREASED HILL-BURTON FUNDS

An increase of Hill-Burton hospital construction funds to 201 million dollars instead of the projected $121,200,000 has been urged on the Senate by the American Hospital Association. The subject is before the Senate appropriations subcommittee headed by Sen. Lister Hill, a co-author of the original hospital act.

The subcommittee has been holding open hearings on the Department of Health, Education, and Welfare budget for the next fiscal year. The House in March voted a number of increases, and the tenor of questioning at the Senate hearings indicated further increases were in the offing.

The AHA, in a letter to the committee, stressed the need for funds for modernization and renovation of hospitals, particularly in the larger cities where it said that many institutions were 50 years old or older. If necessary, the AHA would have the Hill-Burton act amended to take care of this problem. The association also advocated at least 3 million dollars instead of the present $1,200,000 authorization for hospital research.

In earlier testimony, Surgeon General Burney told the Senate group that the $121,200,000 "will meet the most urgent need for new facilities. . . ." He said that hospitals and health facilities, like community programs, need to be geared to the health problems of an aging population. "The whole concept of institutional care is being subjected to searching scrutiny and re-evaluation today," Dr. Burney commented. Some examples follow:

1. Progressive care plan under which patients are moved from intensive care to intermediate care and then to self-service as their condition improves. Some 7,000 hospitals are being surveyed to determine the extent to which the plan can be incorporated into hospital practice.

2. Several studies are being made for ways of adapting modern industrial and administrative business methods to the hospital setting.

Dr. Burney advocated that the Senate subcommittee allow the extra research funds voted by the House to be used for added overhead costs of medical schools and others doing research. The administration had urged that the 15% ceiling on overhead costs be lifted and that as much as 25% be allowed. The House did not go along with this.

The surgeon general commented: "At present, the universities and medical schools are using their funds to pay part of the overhead on research. This constitutes a heavy burden on the limited resources of these institutions. While the schools may certainly be expected to, and themselves expect to, contribute to the nation's medical research effort, this should not be detrimental to their basic educational responsibilities. An increase in our support for overhead costs would enable the schools to chart a better balanced course of both research and teaching."

Dr. Burney spent some time on the problems of public health training. He said that in order to encourage doctors to stay in the service after training, PHS needs to offer opportunities for specialized experience, for advanced study, and for research. "There is no substitute in the practice of medicine for this kind of experience and training in a modern hospital situation," he added.

Senator Hill was of the opinion that there should be more public health schools, although he did not specify the number. There are now 11 schools of public health.

SURVEY SHOWS AVERAGE OF FIVE VISITS A YEAR TO PHYSICIAN

In its first broad study, based on household interviews during July and August of 1957, the National Health Survey reports that in that period the American people visited ther physicians at the rate of almost five times a year.

As a special service, the survey since last fall has been issuing weekly findings on incidence of Asian influenza and other upper respiratory diseases, but this is the first full-scale study on any other subject. Future reports in the series will be on disability, hospitalization, injuries, chronic illnesses, and related subjects.

Other finds in the July-August study follow:

1. Only about 10% of the physician visits were in the home, most of the rest were in the doctor's office.

2. Farm families used physicians at a lower rate than did other groups of the population—3.6 visits per year compared with 4.5 for rural nonfarm population and 5.1 for the urban population.

3. Those in the other two groups visited doctors for checkups somewhat more frequently than did farmers.

4. Two-thirds of all visits involved diagnosis and treatment; only one-third involved preventive care or other services.

5. Indications were that 18% of all people had consulted a physician in the last month prior to date of the interview.

Survey information is obtained from household interviews in a continuous probability sampling of the population. Interviews were conducted in about 9,000 houses, comprising 28,500 persons.

The report, "Preliminary Report on Volume of Physician Visits, United States, July-September 1957," is Public Health Service publication No. 584-B1, for sale by Superintendent of Documents, Government Printing Office, Washington, D. C., for 25 cents.

MISCELLANY

The Department of Health, Education, and Welfare is proposing construction of a 500-bed hospital at Howard University in Washington, D. C., as a medical teaching center. It would have an older 115-bed annex as a nucleus. Freedman's hospital, now run by U. S. Public Health Service, would be transferred to Howard when construction of the new buildings was started. The hospital would be expected to become progressively self-supporting.

New standards for procuring and processing blood, in preparation for more than a year, will be put into effect in May by the Public Health Service. They are given in detail in the Federal Register for April 12.

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NEWER DRUGS IN THE TREATMENT OF HYPERTENSION

IV. USE OF RESERPINE, HYDRALAZINE, AND PENTOLINIUM IN VARIOUS COMBINATIONS

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The possibility of synergistic effects among various drugs used in treating hypertension was explored by testing four combinations: hydralazine and reserpine (18 patients), hydralazine and pentolinium (6), reserpine and pentolinium (30), and all three drugs (24). The dosages varied somewhat, since an effort was made to increase the intake of each drug to reasonable tolerance. The drugs had been used singly in previous studies. The present study indicated the effectiveness of hydralazine when combined with reserpine for treatment of hypertension of moderate severity. Mean blood pressures, as measured in the recumbent position, fell to normal in 11 (61%) of the 18 patients in this group, and the only major drug reaction in this group was hydralazine arthritis in one patient. The combination of hydralazine with reserpine was found to be simple, easily employed in outpatients, and relatively free from intolerable side-effects, provided that the dosage of each drug is gradually adapted to the tolerance of the patient. Hypertensive disease when present in the severe form generally requires the addition of a blocking agent to the combination of reserpine and hydralazine.

DURING THE PAST few years, three new types of drugs have been introduced and utilized in the treatment of primary arterial hypertension, namely, the anticholinergic agents, hydralazine hydrochloride, and various Rauwolfia compounds. When used alone, these drugs have not proved satisfactory as antihypertensive agents for all grades of hypertensive disease because of their inadequate hypotensive action or disagreeable, even intolerable, side-effects when used in effective dosage. The idea of using several drugs in combination,[1] each possessing a different mode of action, in order to produce additive or synergistic effects on blood pressure seems entirely logical. Since the most effective combination of these drugs for the therapy of hypertensive disease is still unsettled, it appeared worthwhile to investigate the effects of reserpine, hydralazine, and pentolinium tartrate employed in various combinations upon a suitable group of hypertensive patients. Pentolinium was the newest of the anticholinergic drugs available at the onset of this study.

Pharmacologically, reserpine, a bradycrotic and tranquilizing agent, produces peripheral vasodilatation by central inhibition of the sympathetic nervous system and possibly by a direct action on the vessel wall.[2] Its principal utility is found in treatment of mild to moderate hypertensive disease. Hydralazine possesses complex actions, including direct peripheral vasodilatation,[3] a weak sympath-

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olytic effect, and neutralization of such pressor principles as hypertensin and pherentasin.[1a] Stimulation of the heart results in increased cardiac output; renal blood flow increases despite fall in blood pressure. When used alone, its hypotensive action is generally weak. Pentolinium,[4] a potent anticholinergic agent which blocks both sympathetic and parasympathetic nervous systems at the ganglion level, achieves blood pressure reduction greater in orthostatic than recumbent positions. Absorption through the intestine is irregular, and wide fluctuations in blood pressure are commonly noted.

Materials and Methods

Previous publications from this hospital have outlined methods of study and follow-up of hypertensive patients undergoing drug therapy.[5] The present series of 78 patients comprises 43 males and 35 females ranging in age from 24 to 65 years (average 45 years). These 78 patients were divided into four groups, each group being treated with a separate combination of drugs. Eighteen patients were treated with reserpine and hydralazine, 6 patients with pentolinium and hydralazine, 30 patients with reserpine and pentolinium, and 24 patients with a combination of all three drugs. Blood pressures, taken in both recumbent and erect positions, were recorded frequently before treatment to establish control levels and repetitively during treatment at daily or weekly intervals.

For purposes of classification in terms of severity of hypertensive vascular disease, patients in this study were divided clinically into four groups—group 1 (mild), group 2 (moderate), group 3 (severe), and group 4 (advanced)—according to a "severity index" similar to those outlined by Page[6] and Goodyer and associates.[7] This severity index is based on level and duration of hypertension, changes in optic fundi and renal function, and the presence of cerebrovascular disease, coronary artery disease, cardiac enlargement, and heart failure. It possesses prognostic significance and offers a simple numerical system to tally changes resulting from treatment. Of the total of 78 patients graded in this manner, 5 were classified as in group 1, 43 in group 2, 17 in group 3, and 13 in group 4.

The three drugs studied had been employed singly or in combination with other drugs in a number of these patients, but inadequate response indicated the need for additional antihypertensive agents. Many patients were transferred from one of the four groups to another because of failure to obtain the desired hypotensive response or because of major reactions to one or more of the drugs. The presence of minor unpleasant side-effects was not an indication for withdrawal of the drug. Wherever possible, blood pressures were recorded at home by a member of the patient's family, since these figures more accurately reflect the average blood pressure than casual blood pressures observed in the physician's office. All recorded blood pressures were included in the averages of reported results. Diets employed varied from the basic rice diet to unrestricted diet. Sodium restriction was ordered for all patients in groups 3 and 4. The majority of patients were treated entirely on an outpatient basis for economic reasons.

Drug dosage schedules for the entire series varied as follows: reserpine, 0.1-0.25 mg. three times daily, increasing to a maximum of 4 mg. daily (average 1.22 mg.); hydralazine, 10-25 mg. four times daily to a maximum of 500 mg. daily (average 259 mg.); and pentolinium, 10-20 mg. four times daily to a maximum of 1,000 mg. daily (average 311 mg.). An attempt was made generally to increase the dose of each drug to reasonable tolerance. In several instances pentolinium initially was administered in parenteral form for short periods before transfer to the oral form. All patients were observed closely for major drug reactions.

Table 1.—*Effects of Reserpine, Hydralazine, and Pentolinium in Various Combinations on Mean Blood Pressure**

	Reserpine and Hydralazine (18 Patients, 3-12 Mo.)†		Reserpine and Pentolinium (30 Patients, 3-24 Mo.)†		Reserpine, Pentolinium, and Hydralazine (24 Patients, 6-20 Mo.)†	
Fall in Mean Blood Pressure, Mm. Hg.	Recumbent	Erect	Recumbent	Erect	Recumbent	Erect
0- 9	1 }11%‡	1 }11%	6 }53%	5 }23%	1 }17%	0 }17%
10-19	1	1	10	2	3	4
20-29	3 }89%	4 }89%	4 }47%	7 }77%	9 }83%	2 }83%
30-39	8	4	6	5	4	5
40+	5	8	4	11	7	13
Patients with fall to normal	11(61%)	13(72%)	1(3%)	13(43%)	7(29%)	14(58%)

*Mean blood pressure is obtained by adding one-third of the difference between the diastolic and systolic pressure to the diastolic pressure

†Duration of treatment.

‡Percentage figures refer to per cent of patients in drug group.

Results

Reserpine and Hydralazine Therapy.—The group receiving a combination of reserpine and hydralazine comprised 18 patients; initial treatment was begun with reserpine in 13 and with hydralazine in 1. Four were started on therapy with the two drugs simultaneously. There were 10 males and 8 females in this group; their ages averaged 44 years. Duration of treatment varied from 3 to 12 months.

Patients were divided according to severity index as follows: four patients in group 1, nine in group 2, four in group 3, and one in group 4.

Table 1 reveals that 16 patients (89%) exhibited a "definite" fall in mean blood pressure of 20 to 40+ mm. Hg in both recumbent and erect positions. (A fall in mean recumbent blood pressure of 20 mm. Hg or greater is considered a "definite" reduction.) Mean blood pressures fell to "normal" in 11 patients (61%) in the recumbent position and in 13 patients (72%) in the erect position.

("Normal" blood pressure is arbitrarily defined as a mean blood pressure of 115 mm. Hg. or less.) Table 2 presents the fall in blood pressure and mean blood pressure as recorded in recumbent and erect positions and averaged before and after months of therapy for each group. It is noteworthy that the average mean blood pressure for the entire group after reserpine-hydralazine therapy returned to "normal" both in the recumbent and erect positions.

Of the 18 patients treated with these two drugs, the severity index changed as follows: four patients in group 3 reverted to group 2, three in group 2 reverted to group 1, two in group 1 changed to group 2, one in group 2 changed to group 3, and the remaining eight patients were unchanged. The only major drug reaction occurring in this group was hydralazine arthritis in one patient.

Reserpine and Pentolinium Therapy.—The group receiving a combination of reserpine and pentolinium comprised 30 patients; initial treatment was begun with pentolinium in 11, with reserpine in 12, and with both drugs simultaneously in 7. Duration of treatment varied from 3 to 24 months. There were 12 females and 18 males whose average age was 45 years. According to severity index the patients were grouped as follows: 1 in group 1, 16 in group 2, 8 in group 3, and 5 in group 4.

TABLE 2.—*Effects of Reserpine, Pentolinium, and Hydralazine in Various Combinations on Group Average Blood Pressure and Mean Blood Pressure*

	Group Av. Blood Pressure, Mm. Hg*				Group Av. Mean Blood Pressure, Mm. Hg					
	Recumbent		Erect		Recumbent			Erect		
Drug Combination	Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment	Fall	Before Treatment	After Treatment	Fall
Reserpine and Hydralazine	200/120	156/93	193/119	143/89	147	114	33	144	107	37
Reserpine and Pentolinium	218/125	184/110	207/125	152/100	156	135	20	152	117	34
Reserpine, Pentolinium, and Hydralazine	222/127	176/104	211/127	151/95	158	127	30	155	113	41

* Systolic and diastolic.

During combined treatment with reserpine and pentolinium, a fall in mean blood pressure of 20 to 40+ mm. Hg was exhibited in 14 patients (47%) in the recumbent position and in 23 patients (77%) in the erect position. Average mean blood pressures fell to normal in 13 patients (43%) in the erect position (table 1) and in 1 patient (3%) in the recumbent position. This indicates the greater postural effects of the blocking agent. The average mean blood pressure fall in the recumbent position was 20 mm. Hg and in the erect position 34 mm. Hg (table 2). However, the resultant mean pressures were still elevated (135 mm. Hg in the recumbent position and 117 mm.Hg in the erect).

The severity indexes changed as follows: one patient in group 4 reverted to group 3, four in group 4 reverted to group 2, three in group 3 reverted to group 2, one in group 2 reverted to group 1, and 21 patients were unchanged.

After varying periods of treatment, 14 of these patients were transferred to the pentolinium-reserpine-hydralazine group because of inadequate hypotensive response and 2 were transferred to the pentolinium-hydralazine group because of reserpine depression. Reserpine therapy was discontinued in one patient because of epigastric distress suggesting peptic ulcer. One patient had all drugs withdrawn because of myocardial infarction, and one patient (group 4) died of cerebrovascular accident after four months of therapy.

Reserpine, Pentolinium, and Hydralazine Therapy.—The group receiving reserpine, pentolinium, and hydralazine comprised 24 patients; initial treatment was begun with reserpine and pentolinium in 14 patients and the three drugs simultaneously in 10 patients. There were 11 males and 13 females whose age averaged 44 years. Treatment time varied from 6 to 20 months. According to severity index, the 24 patients were classified as follows: 14 in group 2, 4 in group 3, and 6 in group 4.

During the administration of these three drugs, mean blood pressure fell 20 to 40+ mm. Hg in both recumbent and erect positions in 20 patients (83%). Mean blood pressure fell to normal in 7 patients (29%) in the recumbent position and in 14 patients (58%) in the erect position (table 1).

After treatment with this combination, reduction in group average mean blood pressure for recumbent and erect positions was comparable to that found in the reserpine-hydralazine group, but greater than that observed in the reserpine-pentolinium group (table 2). It will be noted, however, that the hypertensive disease in the reserpine-hydralazine group was less severe than in the other two groups.

The severity indexes changed as follows: two in group 4 reverted to group 3, five in group 2 reverted to group 1, and one in group 2 changed to group 3. In the remaining 16 patients the severity index remained unchanged.

In this group four patients developed hydralazine arthritis, with L.E. cells in the peripheral blood of two patients, necessitating discontinuance of hydralazine therapy. Reserpine was withdrawn in six patients because of the following major reactions: depression (four patients), anxiety state (one), and distressing nightmares (one). One patient in this group developed myocardial infarction, and all drugs were withdrawn immediately. Two group 4 patients failed to respond to these three drugs, one dying after 8 months and the other after 13 months of treatment. The deaths of both patients were due to cerebrovascular accidents. The increased incidence of complications in this group were ascribed to the severity of the hypertensive disease and the intensity of treatment with maximal drug dosage for prolonged periods.

Pentolinium and Hydralazine Therapy.—The group receiving pentolinium and hydralazine was comprised of only six patients, four females and two males whose average age was 43 years. Three patients had been initially treated with pentolinium alone, and three were started on therapy with the two drugs simultaneously. As to severity index, they were classified as follows: four in group 2, one in group 3, and one in group 4. Duration of treatment varied from 8 to 14 months.

The average blood pressure for the group fell from 217/116 to 180/106 mm. Hg in the recumbent position and from 203/118 to 166/105 mm. Hg in the erect position. Mean blood pressure fell 20 to 40+ mm. Hg in three of six patients in the recumbent position and in four of six patients in the erect position. The mean blood pressure of one patient fell to normal in the erect position and in one patient in both recumbent and erect positions. This group is too small to permit definite conclusions regarding the effectiveness of this drug combination.

Comment

Hypertensive vascular disease of mild to moderate degree may require no more than small doses of reserpine for adequate control of blood pressure.[8] Constant alertness must be maintained for the development of distressing mental illness, notably, anxiety and depression.[9] With increasing severity of the hypertensive process, satisfactory results are less often achieved with a single drug and further compounds must be added to the therapeutic program.[1] Previous observations on the addition of protoveratrine to reserpine demonstrated no significant hypotensive advantage from the combination.[8] The present study, by contrast, indicates the effectiveness of hydralazine when combined with reserpine for treatment of hypertension of moderate severity. The combination is simple, easily employed on an outpatient basis, and relatively free of intolerable side-effects if gradual titration of both drugs is accomplished. Caution must be observed for the development of bone marrow depression or the various clinical features of the "collagen-like" syndrome (fever, chills, arthritis, pleuritis, pericarditis and L.E. cells in blood), which generally occur only when dosage exceeds 400 mg. per day for periods of over six months.[10]

When pentolinium was used in combination with reserpine[1d] the effects appeared less satisfactory than those achieved by the reserpine-hydralazine combination. This difference is due to the greater number of severely hypertensive patients in the reserpine-pentolinium group. The addition of the blocking agent generally added minor side-effects, such as blurred vision, dry mouth, and constipation. Irregular absorption from the intestine led to wide fluctuations in blood pressure, both recumbent and orthostatic. Because of inadequate response, hydralazine was added to the reserpine-pentolinium treatment program of 14 patients. Greater fall in mean blood pressure resulted and more satisfactory control of blood pressure followed, of degree closely approximating the results obtained in 10 patients to whom all three drugs were administered initially. Results obtained by the combination of hydralazine and pentolinium were less satisfactory, but the group was too small for adequate evaluation. It would seem worthwhile to use reserpine and hydralazine in combination when more than reserpine alone is needed. When preliminary observations indicate that more potent compounds will be needed for patients exhibiting the more severe grades of hypertension (i. e., groups 3 and 4), therapy may be initiated under hospital control with reserpine and a blocking agent, hydralazine being added as soon as blood pressure fluctuation from the blocking agent is obtained. An alternative method on an outpatient basis consists of initial titration of reserpine and hydralazine dosage, adding the blocking agent if satisfactory results are not obtained with two drugs alone. The anticholinergic drugs are the most difficult to regulate properly and offer the greatest potential hazards for patients suffering from cerebral and coronary arteriosclerosis and renal insufficiency. Gradual titration of the dosage of each drug cannot be overemphasized in the achievement of successful results. Certainly additive effects are obtained when two or more drugs having different sites of action are used together. Amelioration of side-effects is noted from reserpine in combination with other drugs. After hypertension has been controlled for several months, it is often possible to lower the dosage of each drug and, in a few patients, withdraw one drug entirely.

Summary

Seventy-eight patients suffering from hypertensive vascular disease of varying severity were treated with different combinations of reserpine, hydralazine, and pentolinium. Eighteen patients exhibiting hypertension of moderate severity received reserpine and hydralazine in combination. A definite reduction in mean recumbent blood pressure was observed in 16 patients (89%) and

normal blood pressure was achieved in 11 patients (61%). This combination of drugs proved effective for this group of patients.

Thirty patients exhibiting hypertensive disease of greater severity were treated with reserpine and pentolinium. The mean recumbent blood pressure fell definitely in 14 patients (47%), and in one it reached the normal range. Lack of satisfactory blood pressure control necessitated the addition of a third drug (hydralazine) to the therapeutic program of 14 patients.

Twenty-four patients who had moderate to severe hypertensive disease were treated with three drugs, reserpine, hydralazine, and pentolinium, in combination. Definite reduction in mean recumbent blood pressure was noted in 20 patients (83%), and in 7 patients (29%) the mean blood pressure reached normal values. Comparable results were obtained in one group (14 patients) to which a third drug was added and another group (10 patients) in which therapy with all three drugs was started simultaneously. In a small group of six patients treated with hydralazine and pentolinium, less satisfactory results were achieved, but the number of patients is too small for decisive conclusions.

For hypertensive disease of moderate degree not satisfactorily controlled by reserpine alone the addition of hydralazine has proved to be a simple and effective measure. Hypertensive disease, when present in severe form, generally requires the action of a blocking agent in combination with reserpine and hydralazine.

The reserpine and hydralazine used in this study were supplied as Serpasil and Apresoline by Ciba Pharmaceutical Products, Inc., Summit, N. J.; the pentolinium was supplied as Ansolysen by Wyeth, Inc., Philadelphia.

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DUMPING SYNDROME.—The dumping syndrome is a symptom complex appearing in some patients after gastric resection; it is characterized by epigastric discomfort, nausea, palpitation, tachycardia, weakness, syncope, often a feeling of warmth, and sometimes explosive diarrhea. Rapid gastric emptying results in intrajejunal hyperosmolarity, with a compensating shift of extracellular fluid and plasma into the jejunal lumen to achieve isotonicity. Consequently, a reduction in circulating plasma volume occurs. . . . Increased peripheral blood flow is present in many patients with dumping symptoms. . . . The increased peripheral blood flow is closely related to the systemic symptoms of the dumping syndrome, such as syncope, tachycardia, and weakness. It is suggested that patients who exhibit severe systemic manifestations in dumping attacks have abnormal homeostatic vascular responses to sudden reductions in plasma volume.—D. B. Hinshaw, M.D., and others, Peripheral Blood Flow and Blood Volume Studies in the Dumping Syndrome, A. M. A. *Archives of Surgery*, May, 1957.

SERUM CHOLESTEROL MEASUREMENT—HAZARDS IN CLINICAL INTERPRETATION

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and
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The conclusions that can be drawn from determinations of total serum cholesterol must take into account the varying results obtained by the use of different methods in different laboratories, the discrepancies to be expected between samples taken on the same day, and the physiological variations in a given individual over periods of weeks or months. Duplicate serums from three patients who had had myocardial infarction were analyzed in five different laboratories, one of which used two methods. Not only were the results consistently higher in some laboratories than in others, but the rank-order of the results varied also. The discrepancies were such as to necessitate great caution in drawing inferences regarding diagnosis and treatment from a single cholesterol determination. In assessing the patient's progress on therapy, to be of significance a cholesterol level checked but once after therapy must decrease about 100 mg. per 100 cc. or else there must be a lesser decrease of about 60 mg. per 100 cc. which is consistently maintained.

Much has been written concerning the relationships between serum lipids and lipoproteins and atherosclerosis.[1] It is not the purpose of this report to discuss the evidence for or against these relationships or to compare the relative merits of the various kinds of lipid measurements. Rather, we propose to examine the reliability and the clinical interpretation of one of these measurements, that of total serum cholesterol.

A recent exhaustive report states in its summary, "The measurement of total serum cholesterol remains the most practicable laboratory measurement for aiding in the identification of people with gross disturbances of lipid metabolism which predispose to coronary disease."[2] Keys' experience essentially agrees with this opinion.[3] He has urged that a serum cholesterol measurement be made a part of the annual physical check up, particularly in men over 30, in order to select the individual who should observe special diet precautions or receive special therapy.

If the physician in practice is to heed this advice he should know the answers to the following questions: 1. What is the reproducibility of the results of a given cholesterol method in a specific laboratory? With what confidence can the clinician assume that a single cholesterol measurement represents the true level? 2. What is the range of variability of duplicate samples performed in different laboratories and by different methods? 3. What are the ranges of biological fluctuation of cholesterol levels over a period of months in patients with proved atherosclerosis who do not receive treatment? This paper attempts to answer these questions.

Materials and Methods

The 10 patients who form the basis for this report are part of a larger study inquiring into the long-term effects of various agents on the clinical course of disease in persons who have survived an acute myocardial infarction. This group ranged in age from 40 to 60 years. No patients with complicating diseases, such as diabetes, hypertension, thyroid or renal disease, or xanthomatous abnormalities, were included. These 10 candidates for placebo treatment were randomly selected by choosing hospital registration numbers ending in odd digits. Careful inquiry into diet disclosed no substantial change during the observation period from that before infarction occurred. All of the men were eating the usual American diet, estimated to contain 35-45% of the calories from fat. No patient showed a change in weight of more than 5 lb. (2.3 kg.) during the study. No other treatment was given. Total serum cholesterol measurements were made on patients after a 12-hour fast, the first being done at least two months after the infarction and thereafter at monthly or more frequent intervals for 6 to 12 months. Measurements were made by the Kingsley method,[4] in duplicate, on the same day. Other replicate measurements were made one week to one month later on serum stored in the refrigerator at temperatures of 0 to 6 C.

In order to learn what variability in results might be encountered by analysis of duplicate serum samples in various laboratories, the following program was devised. Three sets of "blind" duplicate samples were submitted to five laboratories on different days. These laboratories were chosen as represen-

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tative of the facilities available in this community and included a Veterans Administration hospital clinical laboratory, a university hospital clinical laboratory, two reputable commercial laboratories, and our own research unit.

Results

Our own laboratory has used the Kingsley method to perform a total of 1,500 replicate measurements on 500 serum samples. When a given serum sample is measured on the same day and in the same "run," analysis shows a respectable average standard deviation for duplicates of ± 16 mg. per 100 cc. The record is less reassuring when the repeat measurement of the sample is performed a day, a week, or a month later. We have no evidence that cholesterol is "lost" or destroyed during storage in the refrigerator. However, when the reproducibility is reanalyzed under these circumstances, the average deviation is found to be ± 27 mg. per 100 cc.

Results obtained in the interlaboratory study are listed in table 1. The most striking thing to be noted is the extreme range of the results. Sample A-B is reported to contain from 311 to 598 mg. per 100 cc. of cholesterol, sample C-D from 183 to 296 mg. per 100 cc., and sample E-F from 172 to 312 mg. per 100 cc.

By simple inspection it is apparent that results reported from commercial laboratory no. 2 are consistently and substantially lower than those reported from the other laboratories. Excluding this laboratory, the standard deviation for all other laboratories is similar and averages ± 28 mg. per 100 cc. for a single determination. This figure is nearly identical with the ± 27 mg. per 100 cc. obtained from the larger study in our laboratory.

Table 1.—*Interlaboratory Comparison of Cholesterol Levels (Milligrams per 100 Cc.) and Reproducibility*

Serum	VA Hospital*	Authors' Laboratory*	University Hospital†	Commercial Laboratory[1]		Commercial Laboratory§
				Method 1†	Method 2‡	
A	479	529	480	598	513	311
B	418	487	541	500	451	318
C	240	260	255	291	273	183
D	233	273	296	263	272	191
E	213	218	275	312	255	180
F	220	249	288	252	246	172

* Method of Kingsley and Schaffert.[4]

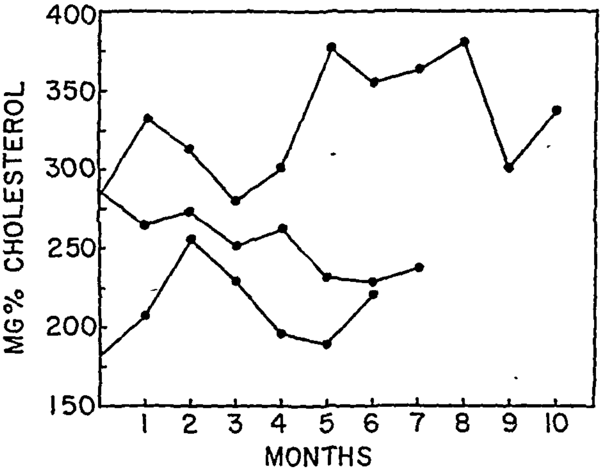
† Method of Bloor: Modified Methods, in Fister, H. J.: Manual of Standardized Procedures for Spectrophotometric Chemistry, New York, Standard Scientific Supply Corporation, 1950.

‡ Method of Pearson, Stern and McGavack: J. Clin. Endocrinol. 12:1245, 1952.

§ Method of Sheftel: Personal communication to the authors.

Depicted in the figure are the month-to-month levels of serum cholesterol in representative patients treated with placebo in the high, middle, and low concentration ranges. Table 2 indicates the data for all 10 patients receiving placebo medication. The reader's attention is called to the wide fluctuation of the serum cholesterol level in some patients and the negligible amount in others and to the weighted average standard deviation of ± 30 mg. per 100 cc. biological variation. Although there is not a wide spread in mean cholesterol concentration in this group of patients, analysis failed to show any significantly greater variation at the higher over the lower levels.

The magnitude of change of serum cholesterol level which would be of statistical significance at the 95% level of confidence (less than 1-20 odds of the observed difference being due to chance) was computed. Under the conditions of this study, this figure is ± 112 mg. per 100 cc. for a single determination and ± 100 mg. per 100 cc. when the measurements are made in duplicate. These figures are based on the sum of the variances (squares of the standard deviations) when the laboratory variance is added to the individual biological variance adjusted for laboratory error.



Serial serum cholesterol levels in three representative patients treated with placebo.

Comment

Had a physician in the course of an annual physical examination submitted sample E (table 1) to commercial laboratory no. 1, he might have felt compelled by the reported serum cholesterol level of 312 mg. per 100 cc. to recommend special dietary restriction for his patient. On the other hand, had the same sample been sent to commercial laboratory no. 2 (180 mg. per 100 cc.), he might have reassured his patient that his serum cholesterol level was well down in the normal range and that he was therefore an unlikely candidate for coronary disease.

Likewise, had a sample been submitted to commercial laboratory no. 1 on the day the E "run" was made (312 mg. per 100 cc.), the physician's course of action may have been quite different from that he would choose had the same sample been submitted to the same laboratory on the F "run" day (252 mg. per 100 cc.). The VA physician submitting sample A to his hospital laboratory and receiving a report of 479 mg. per 100 cc. might be impressed with the results of sitosterols or other agents when the serum cholesterol level two weeks later proved to be 418 mg. per 100 cc., if he were unaware that this difference is within the range of his laboratory's technical error.

Although the serial fluctuations of serum cholesterol level have been well studied in normal persons,[5] periodic changes in the levels of patients with atherosclerosis have not had sufficient attention. Steiner and Domanski[6] have reported a mean standard deviation of ± 24.8 mg. per 100 cc. in 15 patients with coronary arteriosclerosis; Watkin and co-workers[7] did a fundamental study to demonstrate biological variations in serum lipid measurements among a large, unselected group of patients. For individuals in the same age range as covered by our study, they report an average biological standard deviation (exclusive of laboratory error) of ± 13.96 mg. per 100 cc. These data were derived from cholesterol concentrations averaging 208 mg. per 100 cc.

Our own data indicate biological fluctuation to be somewhat higher. Perhaps this difference exists because all of our patients had had myocardial infarction and their mean serum cholesterol level was 77 mg. per 100 cc. greater.

While this evidence indicates that a shift of 100 mg. per 100 cc. in total serum cholesterol concentration is necessary before one can ascribe a result to treatment rather than chance, such a magnitude of change is not necessary for all persons. Table 2 indicates that some persons have remarkably little biological fluctuation. Unfortunately, the clinician cannot know in which patients the determinations will be relatively stable without first measuring control cholesterol levels for several months. Additionally, since the month-to-month measurements fluctuate without apparent trend, it is possible that a drop in serum cholesterol level of less than 100 mg. per 100 cc. which remained at the lower level on repeated determinations would represent a significant result. If one strikes an average of the standard deviations in patients showing the least biological variation and adds to this the laboratory error, then the 95% confidence limits for statistical significance in this situation would be a change of ± 60 mg. per 100 cc.

It should be emphasized again that the ± 27 mg. per 100 cc. standard deviation figure for laboratory error or reproducibility applies only to the laboratories and techniques involved in this study. Special laboratories might show a better record, as the report of the technical group of the committee on lipoproteins and atherosclerosis indicates.[8] However, our data will serve as a guide for the clinician using the ordinary commercial or hospital laboratory.

Summary and Conclusions

There is a wide discrepancy in results of serum cholesterol measurements performed in different laboratories. The reproducibility record of a given laboratory and a given method should be evaluated on the basis of replicate measurements made on different days rather than during the same "run." The identity of duplicate samples should not be available to the technician.

The biological fluctuation in total cholesterol levels of the patients with atherosclerosis treated with placebo in this study averaged ± 30 mg. per 100 cc. standard deviation.

The physician who orders a serum cholesterol analysis to assess "atherogenic potential" should (1) know the performance of the laboratory he selects, and (2) ask the laboratory to submit its standard deviations of reproducibility (performed as described above) along with the report. The physician who prescribes dietary or other treatment for patients with elevated serum cholesterol levels and who wishes to follow results intermittently should use the same laboratory throughout. He should recognize that, to be of significance, a cholesterol level checked one time after therapy must decrease about 100 mg. per 100 cc., or else there must be a lesser decrease of about 60 mg. per 100 cc. which is consistently maintained.

Table 2.—*Range of Serum Cholesterol Levels and Statistical Derivations Of Ten Placebo-Treated Patients*[*]

Case No.	Age, Yr.	Length of Observation, Mo.	Cholesterol Level, Mg./100 Cc.		Maximum Deviation from Mean, %	Total Variance	Biological Variance	
			Range	Mean			Total Minus Laboratory Variance	Standard Deviation
1	56	6	253-345	292	18	1,587	1,290	36
2	40	12	278-373	328	15	1,620	1,388	37
3	52	6	303-392	361	16	1,381	1,039	32
4	44	6	229-299	268	14	1,830	1,678	41
5	59	8	216-286	278	22	462	169	13
6	60	7	182-252	214	18	1,174	847	29
7	43	6	172-286	213	29	321	239	5
8	55	6	290-355	311	14	566	455	21
9	59	7	240-369	292	27	1,890	1,734	42
10	41	6	241-287	266	9	83	0	0
Av.				285	18		845	
Weighted av.							929	30

* No trend could be noted; rise and fall appeared at random.

The flood of literature recommending various agents to lower serum cholesterol should be appraised with these data in mind.

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ANTIHYPERTENSIVE DRUGS AS A CAUSE OF THE ACUTE ABDOMEN

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Four patients, with a clinical picture suggesting the possibility of an acute surgical abdomen to the extent of prompting surgical consultation, were eventually diagnosed as having paralytic ileus and/or vomiting from antihypertensive drugs. Diagnosis of such side-effects depends on an awareness that the patients are receiving the drugs.

Antihypertensive drugs may produce acute abdominal problems. Since one of us (W. F.) within a period of a few months has been asked to see, for evaluation of a possible acute surgical abdomen, four patients receiving antihypertensive drugs, it seems worthwhile to reemphasize the possibility of abdominal complaints occurring during such treatment.

Report of Cases

Case 1.—On June 27, 1956, a 49-year-old man was admitted to the hospital.

History.—The patient stated that for three to five weeks prior to admission he had become progressively short of breath and unable to continue his duties as a mail carrier. For a period of seven months he had had increasing pedal edema. He had been hospitalized in 1952 for similar complaints. Before the present admission he had been taking digitalis and had lost 20 lb. (9.1 kg.) by following a cardiac diet.

Physical Examination.—This well-developed, well-nourished, middle-aged, bed-ridden man appeared to be very apprehensive and dyspneic. Blood pressure was 260/160 mm. Hg. Moist rales were heard posteriorly at both lung bases. The heart was enlarged to the left. The liver was palpable 2 fingerbreadths below the right costal border. A 2+ pitting edema was present over both lower extremities.

Laboratory Data.—The complete blood cell count was essentially normal. The urinalysis was normal except for an albumin level of 30 mg. per 100 cc. and, on microscopic examination, a rare erythrocyte.

Hospital Course.—Initially, the patient's cardiac decompensation was treated with a diet limited to 1,500 mg. of sodium, 4 cc. of elixir of potassium gluconate (Kaon) three times a day, and 0.5 mg. of amorphous gitalin (Gitaligin) daily. His severe hypertension persisted.

From the departments of surgery of Ohio State University and of White Cross Hospital.

On July 6, administration of 2.5 mg. of mecamylamine (Inversine) hydrochloride and 25 mg. of hydralazine hydrochloride four times daily was started. The dosages of these drugs were slowly increased, and, on July 13, administration of 0.25 mg. of reserpine (Serpasil) four times daily was begun. By July 23, the dosage of mecamylamine hydrochloride had been increased to 15 mg. and the hydralazine hydrochloride to 100 mg. four times daily. The evening of that day the patient began to complain of constipation and to become moderately lethargic.

On July 27, the patient was very restless, his abdomen was becoming distended, and his blood pressure had gradually fallen to 150/100 mm. Hg. All drugs except gitalin were withdrawn, and administration of 5 mg. of pilocarpine nitrate three times daily was started.

On July 28, abdominal roentgenograms (fig. 1, *left*) were read as follows: "Erect and recumbent films of the abdomen show a rather diffuse accumulation of gas in the small gut over virtually the entire upper abdomen and to a lesser extent in the lower abdomen consistent with small bowel obstruction. No gas is noted in the large bowel." A Miller-Abbott tube was inserted, and on the following day another roentgenogram (fig. 1, *right*) was interpreted as follows: "A Miller-Abbott tube is coiled in the stomach with the degree of distention of the loops increased over the previous film."

By Aug. 1, the abdomen was less distended but active intestinal sounds could still not be heard. From then on, the ileus slowly disappeared, and the patient was discharged on Sept. 1, 1956.

Final Diagnoses.—Final diagnoses were (1) paralytic ileus resulting from use of antihypertensive drugs and (2) hypertensive cardiovascular disease.

Case 2.—A 67-year-old man was admitted to the hospital on Sept. 23, 1956.

History.—This man, who had been confined to the hospital for three months, had been treated for a variety of conditions. At the time of admission, he had a left-sided paralysis due to a cerebrovascular accident on the right. For years he had had hypertensive vascular disease with a blood pressure of about 210/130 mm. Hg.

On Dec. 26, 1956, the patient had a sudden rise in blood pressure to 260/160 mm. Hg. During the next 36 hours he received 10 mg. of hexamethonium chloride in divided doses. The blood pressure dropped to 140/90 mm. Hg. Then he was given 2.5 mg. of mecamylamine hydrochloride three times daily and 5 mg. of bethanechol (Urecholine) chloride twice daily. With such medication, the blood pressure stabilized at 150/100 mm. Hg, but, on the evening of Dec. 30, the patient began to have distention of his abdomen and to vomit.

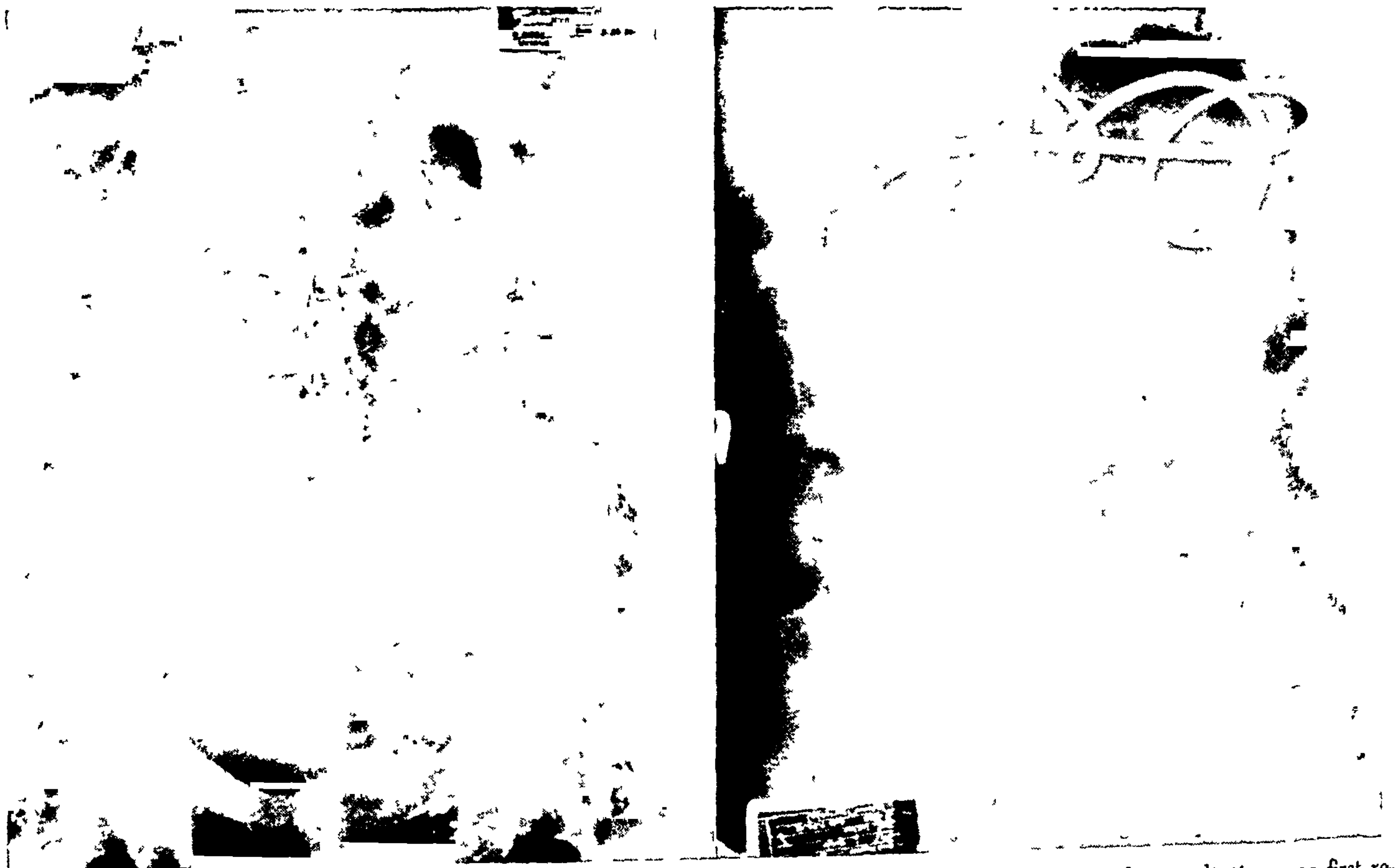

Fig. 1.—Abdominal roentgenograms of patient in case 1. *Left,* roentgenogram made when surgical consultation was first requested. Note the dilated loops of small intestine. *Right,* roentgenogram made one day later. The small intestinal loops are more dilated.

Physical Examination.—On the evening of Dec. 31, the patient appeared to be acutely and chronically ill and somewhat disoriented. His temperature was 98.4 F (36.9 C), pulse rate 104, and blood pressure 150/110 mm. Hg. There was slight paralysis of the muscles of the left side of the face. The abdomen was moderately distended, and no peristaltic sounds could be heard.

Laboratory Data.—The total white blood cell count was 14,000, with 20% nonsegmented neutrophils, 64% segmented neutrophils, 3% eosinophils, 11% lymphocytes and 2% monocytes. On the evening of Dec. 31, abdominal roentgenograms (fig. 2) showed dilated small intestine with fluid levels and considerable gas and feces in the large intestine.

Hospital Course.—A Levin tube was placed in the stomach; intravenous administration of fluids was started slowly, and all medication was discontinued. Within less than a week after the onset of the abdominal symptoms, the patient was again able to eat normally and was having spontaneous bowel movements.

Final Diagnoses.—The final diagnoses were (1) paralytic ileus resulting from the use of hexamethonium chloride and mecamylamine hydrochloride and (2) hypertensive vascular disease.

Case 3.—A 64-year-old man stated that at about 12:30 a. m., Nov. 21, 1956, he developed some vague abdominal pains which soon became sharp and generalized. During the day he vomited several times. Two enemas failed to result in the passage of any gas or feces.

History.—When the patient had been under care for acute pulmonary edema in Dec., 1955, he had had a blood pressure of 240/140 mm. Hg. During the first part of 1956 he had been treated with reserpine, hexamethonium chloride, and hydralazine hydrochloride. From May, 1956, to the time of hospital admission, he had been taking mecamylamine hydrochloride. At the time of hospitalization, he was taking 10 mg. of the latter drug three times daily and, sporadically, 5 mg. of pilocarpine nitrate twice daily.

Physical Examination.—The patient appeared to be having a moderate amount of generalized, crampy abdominal pain. His temperature was 98 F (36.7 C), pulse rate 98, and respiratory rate 22. The blood pressure was 230/110 mm. Hg. The abdomen was moderately distended with some hyperactive intestinal sounds.

Laboratory Data.—The hemoglobin level was 13.3 Gm. per 100 cc. The total leukocyte count was 10,550 per cubic millimeter with 41% nonsegmented neutrophils, 28% segmented neutrophils, 4% eosinophils, 19% lymphocytes, and 8% monocytes. Urinalysis was not remarkable. Roentgenograms were interpreted as follows: "Films of the abdomen demonstrate a moderate amount of air in both large and small bowel. A large amount of fecal material is present in the colon. The films from our point of view are not sufficient for the diagnosis of a mechanical bowel obstruction."

With discontinuation of all medication and enemas, the patient's condition rapidly improved, and he began to have spontaneous bowel movements. He was discharged on Nov. 24, 1956.

Final Diagnoses.—The final diagnoses were (1) vomiting resulting from use of mecamylamine hydrochloride and (2) hypertensive cardiovascular disease.

Case 4.—A 46-year-old woman was admitted to the hospital on Feb. 7, 1957.

History.—The patient stated that about six hours prior to hospital admission she developed crampy upper abdominal pain and began to vomit. She had been constipated for several days.

For some years she had had hypertensive vascular disease with her blood pressure about 200/130 mm. Hg. In early 1956, she had been given hexamethonium chloride, and in the latter part of 1956 and early 1957, mecamylamine hydrochloride. During the month prior to hospitalization, she had taken 15 mg. of mecamylamine hydrochloride daily with two 5 mg. and two 2.5 mg. doses per day.

Physical Examination.—The patient was fairly well developed, slightly obese, and was having abdominal pain. Her temperature was 99.4 F (37.4 C), pulse rate 76, respiratory rate 20, and blood pressure 140/90 mm. Hg. There was slight generalized abdominal tenderness, and peristaltic sounds were hypoactive.

Laboratory Data.—At the time of the patient's admission the complete blood cell count was essentially normal. The urinalysis was negative except for 1+ albumin and granular and hyaline casts. Abdominal roentgenograms were interpreted as follows: "The stomach is distended with fluid and gas; there is tendency to ileus as evidenced by numerous small segments of bowel partly filled with gas and fluid."

Hospital Course.—The patient was given glucose intravenously for nourishment, and the mecamylamine hydrochloride was withdrawn. On Feb. 8, the day after admission, the blood pressure was still 140/90 mm. Hg, but on Feb. 9, the blood pressure had risen to 190/100 mm. Hg. By Feb. 8, the patient was free of pain and was hungry; she was placed on a low-salt diet; she continued to improve and was discharged on Feb. 9, 1957.

Final Diagnoses.—The final diagnoses were (1) vomiting resulting from use of mecamylamine hydrochloride and (2) hypertensive vascular disease.

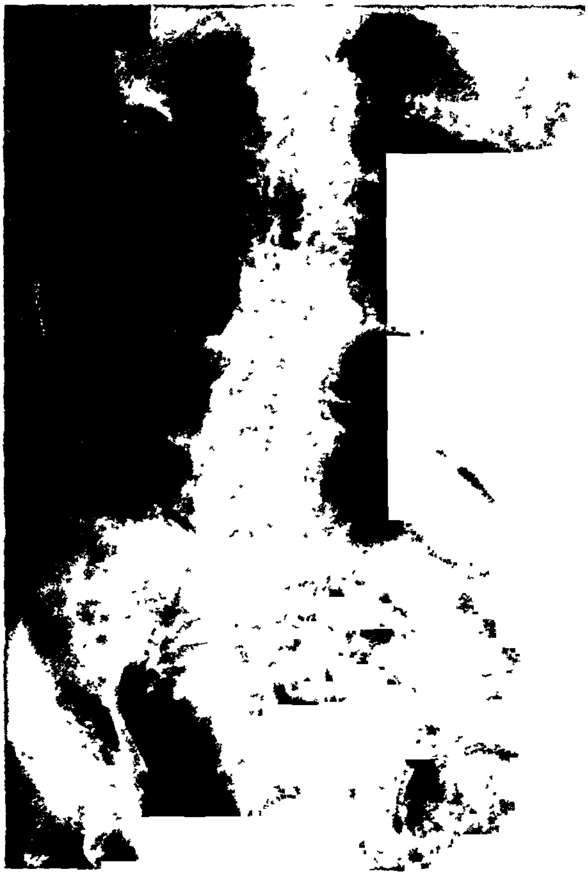

Fig. 2.—Abdominal roentgenogram of patient in case 2. Note generalized distribution of dilated loops of small intestine and gas in sigmoid colon.

Comment

In these four cases the clinical picture suggested the possibility of an acute surgical abdomen and prompted surgical consultation. In case 1, the patient's abdomen became quite distended, and he did not have bowel movements; in addition, abdominal roentgenograms indicated numerous loops of dilated small intestine (fig. 1). In case 2, the distention was not quite as severe as in case 1, and the roentgenograms (fig. 2) showed considerable gas and feces in the colon. In cases 3 and 4, the patients were not so sick; they complained primarily of abdominal pain and vomiting.

Diagnosis of such side-effects with the antihypertensive drugs depends considerably on an awareness that patients receiving such drugs may develop complications as those described in the four cases. If it is not realized that such complications may occur with these drugs, early and accurate evaluation of such abdominal findings may not be made, and unnecessary surgical intervention may be carried out.

Summary

After the administration of antihypertensive drugs, a patient may develop symptoms and signs suggestive of an acute surgical abdomen. Within a period of a few months, we have seen four such patients.

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THROMBOPATHIC STATES

REPORT OF TWENTY-FOUR PATIENTS

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A group of 24 patients, all characterized by prolonged bleeding time with normal clotting time, were studied with respect to family history, personal history, bleeding time, prothrombin time, serum prothrombin, and thrombin generation. None showed abnormalities of clot retraction, platelet count, or morphology. No simple rule was found to explain the inheritance of this defect. The most important finding in the individual histories was excessive bleeding after tooth extractions. Classification on the basis of laboratory findings proved to be difficult, but the cases in general fitted von Willebrand's description of the thrombopathic state, and were shown to include variable abnormalities of labile prothrombin accelerator, platelet prothrombin accelerator, and platelet-co-thromboplastin. Adrenal steroids were used in 12 patients. This therapy was nonspecific, required two or three days to exert its characteristic action, but was effective in 10 patients.

Despite advances in diagnosis of hemorrhagic diseases, one is frequently faced with the clinical problem of the suspect bleeder. Routine bleeding and clotting times may be normal and thus mask a wide variety of potentially serious hemorrhagic states. These include especially the thrombopathic and related or synonomous syndromes of pseudohemophilia, familial hemorrhagic diathesis, thrombasthenia, and capillary bleeding; in addition, hemophilia and hypoprothrombinemia may be included. I consider a "mild" bleeder one who does not suffer severe spontaneous hemorrhage but who may have potentially serious post-traumatic hemorrhage. In the group to be discussed, prolonged bleeding time with normal clotting time is the common denominator.

The relative frequency of different types of hemorrhagic syndromes is well illustrated in the work of Cazal and Izarn,[1] who investigated the cause of hemorrhagic states in 273 patients. They were unable to demonstrate a defect in hemostasis in 149 (54%) and ascribed the bleeding to local vascular origin. The etiology of bleeding in the remaining 124 patients was as follows: in 46% it was attributed to thrombocytopenia, in 35% to increased vascular fragility, and in 19% to plasma coagulation defects. In only 11 of the 273 patients could it be classed as hemophilia. The present report is concerned with detection and treatment of relatively mild bleeders.

The role of the platelet in hemostasis is the resultant of several functions.[2] Complete agreement is by no means present; however, a working schema is shown in figure 1. The mechanism of platelet function in clot retraction is not well understood, but clot retraction does not occur in platelet-free

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plasma or blood.[1] Physical factors, such as adhesiveness, undoubtedly play an important role in hemostasis, as indicated in the work of Wright[2d] who demonstrated that heparin reduced adhesiveness of platelets while postsurgical and postpartum evidence for increased adhesiveness was shown. Evidence for a potent vasoconstrictor factor derived from the platelet has been demonstrated in the work of Zuker.[2b] Platelets have been shown to contain a prothrombin-accelerator factor which acts in a manner similar to AC-globulin[3] (conversion accelerator, V factor, labile factor). Perhaps the most important action of platelets has been shown to be that of a thromboplastic co-factor.[4] A heparin-neutralizing substance, a phosphatide, has been described[2a] and a simple heparin-tolerance test devised for its detection. Clinical tests for evaluation of each factor are not available, although a prolonged bleeding time may be considered a crude measure of platelet dysfunction or absence.

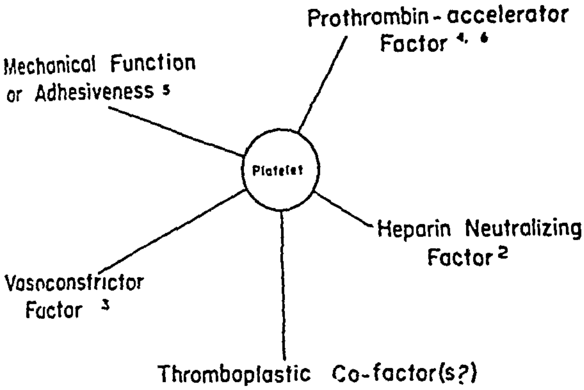
Prothrombin - accelerator Factor 4, 6
Mechanical Function or Adhesiveness 5
Platelet
Heparin Neutralizing Factor 2
Vasoconstrictor Factor 3
Thromboplastic Co-factor(s?)

Fig. 1.—Role of platelet in clot formation.

Recent studies[5] have demonstrated that a normal clotting time does not exclude hemophilia. In a given patient with a slightly prolonged bleeding time and normal clotting time one must, therefore, specifically exclude deficiencies of antihemophilic globulin (AHG), plasma thromboplastin component (PTC), and plasma thromboplastin antecedent (PTA). The differential diagnosis of these groups by Rosenthal[5] is shown in table 1.

Table 1.—*Differential Diagnosis of Antihemophilic Globulin (AHG), Plasma Thromboplastin Antecedent (PTA), and Plasma Thromboplastin Component (PTC) Deficiency**

	Corrected	
	Serum	$BaSO_4$-Treated Plasma
AHG deficiency	No	Yes
PTA deficiency	Yes	Yes
PTC deficiency	Yes	No

* Rosenthal.[5]

Bleeding times are usually normal in hypoprothrombinemic states; however, frequent exceptions have been noted so that the differential diagnosis of these states is included. Manipulations of the Quick one-stage prothrombin test have been used for clinical differentiation (table 2).

Methods

Patients were seen in the course of routine clinical hematological practice. Patients with frank hemophilia, severe hypoprothrombinemia, and thrombocytopenia are excluded. Results in the study of 24 patients are reported. Table 3 highlights the methods used. All determinations were made on freshly drawn blood.

Table 2.—*Differential Diagnosis of Hypoprothrombinemic States*

	Prothrombin Time with Deficiency of		
	Prothrombin	Stable Factor	AC-Factor*
Plasma	Prolonged	Prolonged	Prolonged
Plasma plus stored plasma† (1:1)	Normal	Normal	Prolonged
Plasma plus stored serum (9:1)	Prolonged	Normal	Prolonged
Plasma plus prothrombin-free rabbit plasma (9:1)	Prolonged	Prolonged	Normal

* Deficiency of platelet AC-factor determined by addition of 0.1 volume washed platelets to test plasma uncorrected by above measures.
† 30-40-sec. Quick one-stage prothrombin time.

Bleeding time was determined in duplicate by using blood from both ears, and care was exercised to prevent massage of the ears or rubbing of the skin with the blotter paper. In nearly all cases the bleeding time determination was repeated on several occasions, days to weeks apart. Prothrombin-free rabbit plasma was used in prothrombin consumption tests. Screening for fibrinolysin was evaluated by observation of clot breakdown in the tubes during the performance of the clotting time and retraction tests. Lysis of the clot in less than 45 minutes was considered abnormal.

Table 3.—*Methods Used in Evaluation of Hemorrhagic Tendency*

Determination	Method	Normal*
Bleeding time	Duke[6]	<4.5 min.
Prothrombin consumption	Quick[6]	Serum prothrombin 15% or less at 1 hr.
Thrombin generation	Pitney and Dacie[7]	1 unit thrombin/ml. of thrombin-fibrinogen mixture clots in 18-20 sec. at 37 C. Normal with 4-8 units of thrombin at 4 min.
Platelets	Dameshek[7a]	200,000-300,000/cu.mm.
Clotting time and retraction	Lee and White[6]	5-15 min. with retraction complete within 1 hr.
Heparin-neutralizing substance	Van Creveld[2a]	Tube no. 1 (1/ug. heparin clots 20-30 min.) Tube no. 2 (2/ug. heparin clots 25-40 min.) Tube no. 3 (4/ug. heparin clots 40-60 min.)
Prothrombin time	Quick[6]	13-13.5 sec. = 100%

* Refers to normal values obtained in our laboratory.

Platelet suspensions were freshly made daily. Blood was collected from both the patient and normal control subject on each determination, with use of silicone technique without anticoagulants. A pellet of platelets was obtained from 20 ml. of blood by centrifugation in an ice bath, by washing three times in isotonic sodium chloride solution, and then by suspension in 1.5 ml. of isotonic sodium chloride solution. One part of normal platelet suspension was added to three parts of fresh blood in the experiments evaluated by prothrombin consumption testing. One-tenth volume of platelet material was added to decalcified plasma in those cases evaluated by the thrombin generation test. The effects of the platelet additions were evaluated in normal persons, in patients with hemophilia (AHG deficiency), and in controls with thrombocytopenia, as well as in patients studied.

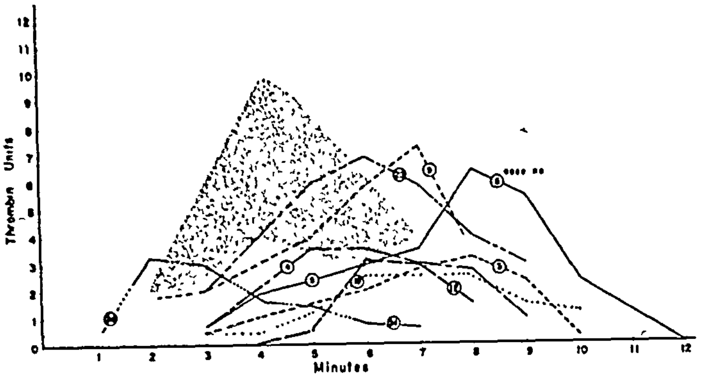

Fig. 2.—Abnormal thrombin generation in thrombopathic states (shaded area is normal range).

The thrombin generation test, as performed on recalcified plasma,[7] was used as a further check on the prothrombin consumption test. A purified form of human fibrinogen was used in this test. Samples from recalcified plasma are added at one-minute intervals to tubes containing standard fibrinogen solution. The concentration of thrombin is inferred from the rate of fibrinogen clotting. A standard curve was prepared with use of known solutions of thrombin (Thrombin topical) so that from any sample the time of the clotting could be converted to thrombin units. The normal curve used in this study, (fig. 2), based on results in 30 normal persons tested, compares favorably with that reported by other authors.[7]

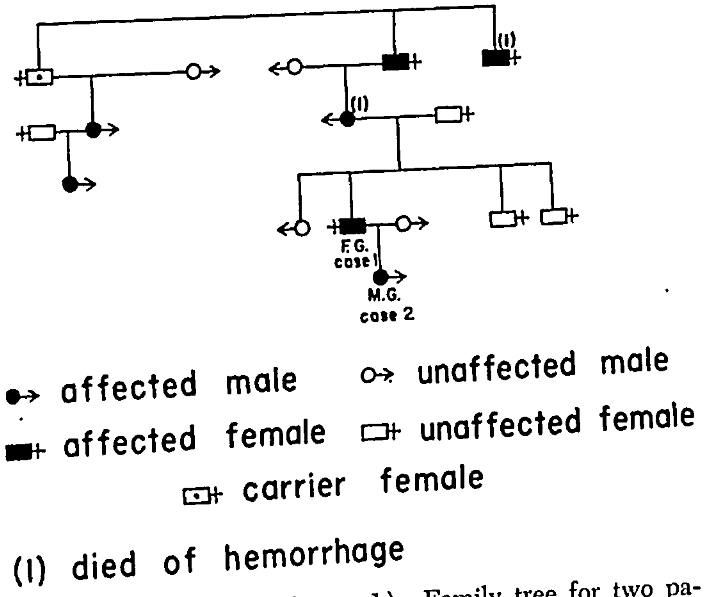

Fig. 3 (table 4, family no. 1).—Family tree for two patients with thrombopathy (von Willebrand type).

Observations and Results

The basic data concerning the 24 patients are summarized in table 4.

Heredity.—Eighteen patients, 7 males and 11 females, representing 11 kindreds, gave a family history of bleeding tendency. Except for family no. 2, inheritance was not sex-linked and the defect was transmitted by either sex, as illustrated in figure 3. In contrast, the sex-linked (x-borne) mode of inheritance predominated in this family, as illustrated in figure 4. In the remaining six patients there was no known family history of bleeding tendency.

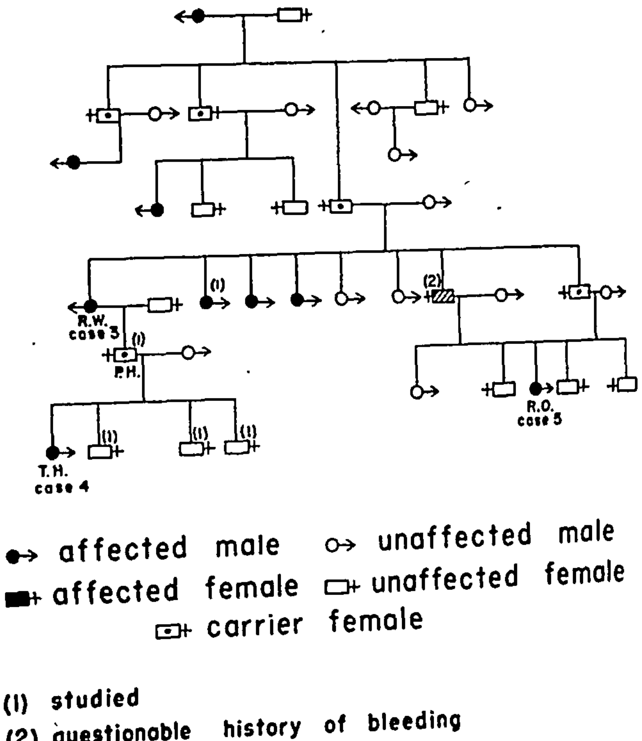

Fig. 4 (table 4, family no. 2).—Family tree for three patients with unclassified thrombopathy.

Effect of Bleeding on General Health, and Deaths.—The patients in cases 1, 2, 4, 6, 7, 9, 14, and 18 presented variable stages of chronic ill-health characterized by fatigue, muddy complexion, chronic anemia, repeated mouth infection, and dental caries. The patient in case 18, a reliable observer, noted that fatigue would be followed by bleeding from the nose and gingiva and that remissions were accompanied by a sense of increased strength and well-being. Menorrhagia was almost constant for the first four years after onset of menses in the patient in case 14. Fear of postextraction hemorrhage occasionally caused undue delay in seeking adequate dental care. Seven deaths were attributed to bleeding tendency in the family histories. One additional death occurred in this series.

TABLE 4.—*Summary of Findings in Twenty-four Patients with Thrombopathic States*

	Case No., Age, Yr., and Sex	Family History	Personal History	Bleeding Time, Min., Sec. (Normal, 2-4 Min.)	Prothrombin Time (Normal, 100%)	Serum Prothrombin (Normal, <15%)	Thrombin Generation (Normal, 4-8 Units at 4 Min.)	Remarks*	Classification
Family No. 1	1—23, F	Father bruised easily, had frequent epistaxis, and died after tooth extraction; paternal aunt died of postoperative hemorrhage; mother of patient in case 2	Frequent epistaxis, menorrhagia, easy bruising, chronic ill-health due to blood loss	5 24 6 11 14	100 40 100 100 57	16 14 14 16 35	...	Therapy with protamine sulfate, 150 mg., intravenously, shortened bleeding time from 14 and 16 min. to 8 min., 30 sec. on two trials; 250 ml. in normal saline also reduced bleeding time from 11 min., 30 sec. to 7 min., 30 sec.; AC-globulin, vitamin deficiency, and increased heparin excluded	Thrombopathy (von Willebrand type)
	2—4, M	See case 1; 7 known bleeders in family; simple dominant pattern of inheritance	Bruises easily, epistaxis, chronic ill-health, nearly exsanguinated after minor cut on tongue	4 30 5	90 100	35 57	...	Therapy with protamine sulfate, 100 mg., and blood given intravenously without benefit in control of tongue laceration; controlled by suturing	Thrombopathy (von Willebrand type)
Family No. 2	3—53, M	Three brothers and (questionably) one sister bruise easily; frequent epistaxis, and postextraction bleeding; cousin had chronic ill-health due to repeated hemorrhages; 10 known bleeders in family; sex-linked recessive pattern; grandfather of patient in case 4	Epistaxis, frequent bruising, postextraction hemorrhage, and rectal bleeding since childhood; bleeding frequently delayed 7-14 days after surgery	5,30 8,30 2 3 4 7	100 90 100 100	4 1 4	Delayed	Fresh whole blood given without benefit; severe total postextration hemorrhage stopped on 3 trials with slow intravenous drip of 25 mg. ACTH in 1,000 cc. dextrose solution	Thrombopathy, unclassified
	4—7, M	Two sisters, free from bleeding tendency, have normal serum prothrombin content; 2 brothers bruise easily, have delayed thrombin generation	Severe post-tonsillectomy and postextraction hemorrhage, gastrointestinal and renal hemorrhages, bruises easily, epistaxis; chronic ill-health	8 7,15 5	100 100 ...	45 29(a) 29(b)	Delayed	(a) Corrected, in vitro by platelets from grandfather (case 3); normal control (b) 200 cc. fresh blood in silicone, yielding 200,000 platelets per cu. mm., did not correct prothrombin consumption	Thrombopathy, unclassified
	5—21, M	Nephew of patient in case 3; mother free from bleeding trait; family history as for cases 3 and 4; 2 sisters free from bleeding tendency	First bleeding, age 1 yr., from minor cut; hospitalized, age 4, with cut lip; transfusion gave questionable help; at age 5, cut lip and bled one week; at age 11, cut head, bandaged with pressure for 2 mo. with intermittent bleeding and massive hematoma; bled 3 wk. from minor palatal scratch; epistaxis	2,26 2,40 3	100 100	3 8	Delayed	Test for heparin neutralization normal; thrombin generation corrected with platelets; partial correction with normal and PTC-deficient plasma	Thrombopathy, unclassified
Family No. 3	6—20, F	Paternal grandmother, father, and two uncles were bleeders; father and his brother died of gastrointestinal hemorrhage; mother of patient in case 7	Epistaxis, postextraction, and postpartum hemorrhages required transfusions	>40	100	...	Normal	...	Thrombopathy (von Willebrand type)
	7—1½, F	See case 6	Repeated severe epistaxis; bleeding from minor cuts	8 >30 20	100	...	Normal	...	Thrombopathy (von Willebrand type)
Family No. 4	8—58, M	Mother had frequent epistaxis, menorrhagia, bruising, and postextraction bleeding and died of gastrointestinal hemorrhages; brother died of gastrointestinal hemorrhages; one of the latter's twins (son) is a bleeder, and the twin daughter is normal; father of patient in case 9	Frequent nosebleeds during childhood required packing; minor cuts bled excessively until approximately age 50 yr.; postextraction bleeding, age 14; massive gastrointestinal hemorrhages, age 32, with negative x-rays, massive gastrointestinal hemorrhages, age 50; mild bleeding tendency thereafter	7,5 5,55	100	15	...	...	Thrombopathy (von Willebrand type)
	9—35, M	Son of patient in case 8; two daughters bruise constantly	Frequent nosebleeds requiring packing; excessive postextraction bleeding during childhood; tarry stools; onset age 33, intermittent to date and requiring many transfusions; chronic invalid state due to blood loss	20 9 20 16(a) 5(b) >30(c) 12(c) >60	78 60 80 80(a) 80(b) 60(c) 97(d) 79	2	Delayed	(a) After 500 cc. and (b) after 1,500 cc. fresh whole blood transfusion with glass equipment; (c) before and (d) after 500 cc. whole polycythemic blood given intravenously in silicone equipment; test for heparin neutralization normal; ACTH and cortisone therapy given without benefit	Thrombopathy (von Willebrand type) with platelet and plasma AC-globulin deficiency
	10—5, F	Daughter of patient in case 9; see cases 8 and 9	Age 2, lip cut with mild bleeding, sutured for control; bruises on body constantly	>30 >30	100 100 90	20 5	Normal	Heparin neutralization probably normal	Thrombopathy (von Willebrand type)

* Clotting times, platelet counts and morphology, and clot retractions were normal throughout.

TABLE 4.—*Summary of Findings in Twenty-four Patients with Thrombopathic States* (Continued)

Case No., Age, Yr., and Sex	Family History	Personal History	Bleeding Time, Min., Sec. (Normal, 2-4 Min.)	Prothrombin Time (Normal, 100%)	Serum Prothrombin (Normal, <15%)	Thrombin Generation (Normal, 4-8 Units at 4 Min.)	Remarks*	Classification
11—28, F	Sister, mother, and maternal great-grandmother had excessive postpartum hemorrhages, frequently delayed	Post-tonsillectomy and postpartum hemorrhages, requiring transfusions	4 9,30	100	20 (control, 18% on this *occasion*)	...	Therapy with vasopressin (Pitressin) by slow intravenous drip, prolonged, claimed to have helped postpartum hemorrhages	Thrombopathy (von Willebrand type)
12—32, F	Father had frequent epistaxis; additional history unavailable	Epistaxis requiring frequent packing; bleeding for 1 wk. after submucus resection and after tonsillectomy; transfusions uneffective; severe menorrhagia	10 11 5,55 7,10	63 89 100 79	... ...	Delayed Delayed	Bleeding time and impaired thrombin generation worsened postoperatively (dilatation and curettage) even though 1 unit fresh blood given in plastic; ACTH and prednisone (Meticorten) effective in postdilatation and curettage bleeding and for menorrhagia	Thrombopathy (von Willebrand type)
13—48, F	Four known bleeders; 6 with equivocal history of bleeding *tendency, either sex affected; bleeding,* postextraction and *post-tonsillectomy;* menorrhagia noted	*Spontaneous gingival* bleeding; epistaxis; mild left hip hemar*throsis; bruises easily*	5 11 9,30 4,15	100 100 100	 5	Normal	Heparin neutralization normal; excellent control of extractions with cortisone and local therapy as compared with prior extractions	Thrombopathy (von Willebrand *type)*
14—30, F	Uncertain; mother had menorrhagia	Long history of easy bruising and epistaxis as a child; nearly constant menstrual bleeding for 4 yr. after onset, now very heavy but lasts 5-6 days; bled 4 days postextraction; oophorectomy, however, without serious bleeding	6,30 8,30 15	... 100 90	16 ... 16	...	...	*Thrombopathy (von Willebrand type)*
15—16, F	Mother had menorrhagia and epistaxis and died after delivery due to postpartum hemorrhage; maternal aunt bruises easily	Episodic gingival and nasal hemorrhages, frequently lasting for months	3,30 4,26 2,43 10 10	100 100	18	Normal	Gingival bleeding nearly constant during night; prednisone used with complete control	Thrombopathy (von Willebrand type)
Family No. 5 16—33, F	Father and paternal aunt with epistaxis and postextraction *bleeding;* daughter of patient in case 17	Childhood epistaxis; severe menorrhagia, postpartum and postextraction hemorrhage, *frequently delayed; spontaneous bleeding* from migratory telangiectasia	7,5 4,50 5,35	100	...	Normal	ACTH and prednisone effective; extractions without abnormal bleeding	*Thrombopathy* (von Willebrand type)
17—12, F	See case 16; one brother normal; *one brother* has mild bleeding tendency	Bruises easily; prolonged bleeding from cuts; severe post-tonsillectomy hemorrhage	>22	61	...	Normal	*Prothrombin corrected* in vivo with prothrombin-free rabbit *plasma or fresh* platelet-free plasma; uninfluenced by serum	Thrombopathy (von Willebrand type) with labile prothrombin deficiency
18—52, F	**Negative**	Spontaneous onset of bleeding in 1945 after 20 injections of gold *for arthritis,* with no known toxic reaction; appendectomy, 1926, and extractions up to 1944 without evidence *of hemorrhage;* chronic anemia, intermittent *severe gingival* bleeding, and prolonged episodes of epistaxis	2,30 >25 7 8,30 7,8 >25	100 100 100 100 100 100	16 35(a) 8 2 31(b)	Delayed	(a) *Histamine* (as below, case 19) to *tolerance* dose of 0 69 mg. *did not correct* serum *prothrombin* or shorten bleeding time; protamine *sulfate* was of no value on 2 trials (b) 500 cc. *polycythemic* blood given intravenously in plastic reduced serum *prothrombin to 11%;* hydrocortisone stopped bleeding	Acquired thrombopathy
19—45, M	**Negative**	Spontaneous onset while *receiving gold* therapy for rheumatoid arthritis; also developed toxic nephrosis; bleeding at sites of needle punctures; easy bruising; onset on 1/7/53 and persisted to 1/5/54	13 ... ... 12,30(a) 10 11 4 3,5	100 ... ... 75(a) 92 72 100 100 100	... 45 58 40(a) 39 37 29 90 2	...	(a) When 1.82 mg. histamine diphosphate was *given intravenously* plasma prothrombin *of 75% and serum* prothrombin *of 40%* both converted to normal; first normal serum prothrombin on 12/20/54, after prolonged therapy with ACTH	Acquired thrombopathy
20—36, F	**Negative**	Menorrhagia and easy bruising for *many* years	5 5,30 92 4 10 ...	72 70 80 75 80 77 and 63(a)	11	...	Vitamin K₁ oxide given without improvement (a) Prothrombine *time* before and after extraction *respectively*	Acquired thrombopathy *with mild* plasma AC-globulin deficiency
21—25, M	*Negative*	Tonsillectomy, age 4, and orthopedic surgery, age 10, carried out without difficulty; 1st noted postextraction oozing for 1 wk., age 17; referred because of 11-day episode of postextraction bleeding	9,35 12	50 50 65	...	Normal	Liver profile and plasma electrophoresis normal	Acquired thrombopathy with AC-globulin deficiency

* Clotting times, platelet counts and morphology, and clot retractions were normal throughout.

TABLE 4.—*Summary of Findings in Twenty-four Patients with Thrombopathic States* (Continued)

Case No, Age, Yr., and Sex	Family History	Personal History	Bleeding Time, Min., Sec. (Normal, 2-4 Min.)	Prothrombin Time (Normal, 100%)	Serum Prothrombin (Normal, <15%)	Thrombin Generation (Normal, 4-8 Units at 4 Min.)	Remarks*	Classification
22—61, F	Unknown	Bled excessively after extraction; history of easy bleeding noted; fatal hemorrhage after thyroidectomy	18 12	52 47	2 2	...	ACTH given at time of first set of data, and second data taken 2½ hr. later; patient died suddenly; autopsy showed deep neck hemorrhages as cause of death	Acquired thrombopathy (?) with hypoprothrombinemia (type undetermined)
23—18, M	Questionable maternal history of menorrhagia and epistaxis	Frequent and severe epistaxis for 2 yr.; extractions, 2/51 and 10/52 without difficulty; mild to severe delayed (5 days) postextraction bleeding since 1953	5 11 4 3 3	100 78 100 100 100	... 11 32 24 25	Delayed	Tooth extraction, with ACTH, thrombin-gelfoam pack, and sutured, successful; thrombin generation delay corrected with platelets or serum	Thrombopathy (von Willebrand type)
24—5, M	Negative	Almost daily nosebleeding and bruising for past 8 mo.; cerebral palsy with mental deficiency	9,5 7,15(a)	100 100(a)	41 36(a)	Abnormal	(a) Readings 18 hr. after receiving ACTH, 25 mg., and hydrocortisone, 60 mg.; stopped bleeding in 24 hr. and remained free for 2 wk.; intermittent cortisone therapy has controlled bleeding for 2 yr.; vitamin K and large doses of ascorbic acid for 6 wk. previously of no value	Thrombopathy (von Willebrand type)

*Clotting times, platelet counts and morphology, and clot retractions were normal throughout.

Bleeding Time.—The variability of bleeding time is graphically shown in figure 5. The volume of bleeding, as seen on the filter paper, was frequently excessive, apart from the time factor itself.

Clotting Time, Clot Retraction, and Platelets.—We found no abnormalities in clotting time, retraction, platelet count, or morphology.

Plasma Prothrombin.—Plasma prothrombin studies are shown in tables 4 and 5. Abnormal one-stage prothrombin times were recorded in the plasma of six patients. Patients in cases 9, 12, 17, 20, and 21 are shown to have AC-globulin deficiencies (table 5).

Prothrombin Consumption.—Variability of the serum prothrombin, which ranged from normal to abnormal, is shown in tables 4 and 6. In members of the same family who were bleeders, it varied so that while one usually had normal serum prothrombin (as in cases 1, 3, and 5) another might be abnormal (as in cases 2 and 4).

TABLE 5.—*Differential Diagnosis of Prolonged One-Stage Prothrombin Content*

		Effect of Added Fractions on One-Stage Prothrombin Test, %				
Case No.	One-Stage Prothrombin Range, %	Prothrombin-free Plasma* (9:1)†	Aged Serum (9:1)	Fresh Plasma (1:1)	Stored Plasma (1:1)	Platelets (9:1)
1..........	40-100	...	...	...	...	...
12..........	63-100	100	63-100	...	63-100	63-100
9..........	60-80	100	60-80	...	50	100
17..........	61	100	60	100	...	60
20..........	63-80	100	85	100	40	70
21..........	50-65	100	40	100	40	...
22..........	47-52	55	...	...	...	...

* Prothrombin-free rabbit plasma

† Volume patient plasma: volume added substance.

Freshly washed human platelets corrected the serum prothrombin time in cases 4, 18, 19, and 24, but not in case 23. Control plasma from a patient with idiopathic thrombocytopenic purpura with platelets reduced to 8,000 to 10,000 per cubic millimeter was shown to have a serum prothrombin time of 12 seconds which could be corrected to 120 seconds (less than 1%) with comparable platelet additions.

TABLE 6.—*Range of Serum Prothrombin in Thrombopathic States with Abnormal Values and Effect of Adding Fresh Normal Platelets*

Case No.	Serum Prothrombin Range, % (Normal to 15%)	Serum Prothrombin After Adding Platelets (1 Vol. Platelets:3 Vol. Whole Blood)
1..........	14-35	...
2..........	35-57	...
4..........	29-45	4-7
10..........	5-20	...
18..........	2-35	4
19..........	29-90	2
23..........	11-32	20*
24..........	36-41	3

* Not corrected.

Thrombin Generation.—The results for family no. 2 will be considered first. A normal thrombin unit value was obtained but was delayed two to three minutes in the test on unmodified blood and four to six minutes in the test on recalcified plasma.[7] Figure 2 illustrates the skew to the right (delayed generation) of the thrombin generation curves in the above kindred and also in cases 9, 12, 18, 23, and 24. In all except the patient in case 24, platelets corrected the abnormal thrombin generation (table 7). Plasma from this patient was unusual in that thrombin generation began prematurely and abruptly declined. In case 23, serum (PTC and PTA) partially corrected the delay while platelets alone produced complete correction. Because of the sex-linked recessive pattern in family no. 2, numerous tests (table 7) were conducted to exclude AHG and PTC deficiency, including the use of patient plasmas deficient in these factors. Equivocal results in cases 3 and 4, suggesting mild associated AHG deficiency, were shown (table 7). Platelets from patients in cases 4 and 18, when added to platelet-free normal plasma, resulted in normal thrombin generation, while those from the patient in case 12 were ineffective.

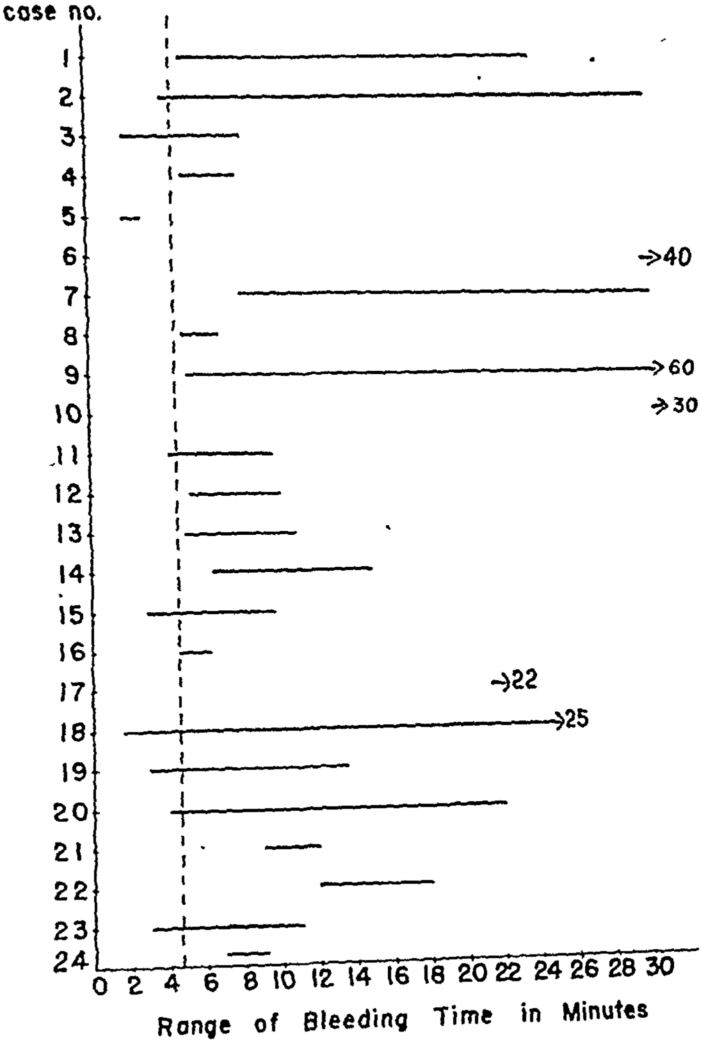

Fig. 5.—Variability of bleeding time in patients with thrombopathy.

Therapeutic Trials.—In 1950, a female patient was seen for serious postextraction hemorrhage despite transfusion with 12 pints of fresh whole blood. Hemorrhage was dramatically controlled with 150 mg. of protamine sulfate in 1,000 cc. of dextrose solution given intravenously. Bleeding was stopped within a period of 10 to 15 minutes on three occasions, and finally a prolonged 24-hour intravenous drip completely controlled bleeding. With that experience, this drug was tried in several other patients. However, none responded (cases 1, 2, and 18).

Use of silicone-treated transfusion equipment was begun, and results have been encouraging. The patient in case 9 had received 24 units of whole blood, much of it fresh, without control of gastrointestinal hemorrhage. The first unit of polycythemic silicone-protected blood increased the plasma one-stage prothrombin time from 65% to 95% of normal and reduced the bleeding time from greater than 30 minutes to 12 with marked reduction in intensity of bleeding. Subsequently, each of six episodes of massive gastrointestinal hemorrhage have been controlled by a routine of 2 units of fresh blood in plastic bags every 12 hours for 48 to 72 hours. Bleeding and prothrombin times have become normal at the close of this period.

I wished to observe the effect of intravenously administered histamine. Eosinophil counts taken prior to the infusion revealed only 2 per cubic millimeter in each of two cases, as compared with a normal control patient. Histamine diphosphate (0.69 mg.) given intravenously to the patient in case 18 to a point of severe headache had no effect on the impaired serum prothrombin content of 35%. Her control bleeding time was over 25 minutes and was 20 minutes after the infusion. Platelet clumping was noted to be present before and after the experiment. However, in the patient in case 19, after 1.82 mg. of histamine diphosphate was given to a point of asthmatic symptoms, the plasma prothrombin content of 75% was corrected to 100% and serum prothrombin of 40% was corrected to 17%. Bleeding time of 12.5 minutes was reduced to 6 minutes. Platelet clumping, which was absent before the infusion, was present after the infusion.

The use of steroids was begun in January, 1953, and my experience with patients having thrombopathic states is summarized in table 8. Two failures were noted among the 11 patients treated. The patient in case 9 has been completely refractory to intensive steroid therapy. That in case 22 died in 2½ hours, so that the effects of prolonged therapy were unobtainable. An additional patient with thrombopathic state not included in this report was prepared for removal of a cataract with use of steroids, and a completely normal course resulted. The chief hazard of steroid therapy is the development of thrombophlebitis. This occurred in cases 3 and 13. Pulmonary embolism occurred in case 13 and in two other cases not included in this report.

Table 7.—*Differential Diagnosis of Cases with Delayed Thrombin Generation**

Case No.	Platelets	Normal Plasma	BaSO₄ Plasma	48-Hr. Serum	PTC-Deficient Plasma
3	C	PC	PC	UC	PC
4	C	UC	UC	UC	UC
5	C	PC	UC	UC	PC
9	C	UC	UC	UC	UC
12	C	PC	UC	UC	...
18	C	UC	UC	UC	UC
23	C	UC	UC	PC	...
24	PC	UC	UC	UC	...

* C, corrected; PC, partially corrected: UC, uncorrected.

Comment

The cases described fit the von Willebrand-Jürgens description of thrombopathic state and showed marked variability in bleeding time and hemorrhagic manifestation. However, the sole finding of a prolonged bleeding time is not proof that surgery will be complicated. Major surgery may be less of a problem than a simple tooth extraction. I have observed not infrequently that minor surgery, involving teeth, eyes, tonsils, and skin, may lead to excessive bleeding with poor wound healing not associated with major procedures in the same patient.

Prolonged bleeding times are usually not seen with prothrombin or accelerator defects, although exceptions have been recorded.[8] Several of my patients with lowered prothrombin times had prolonged bleeding times even though the prothrombin defect was not of the same origin in each. Prolonged bleeding time does not exclude hemophilia. Consequently, a prolonged bleeding time does not identify the disease state, and more detailed studies are required. The defects in prothrombin times rarely approached a level of 20 seconds (approximately 40%), which Quick has listed as critical.[8a] Even so, the bleeding tendency seen in this hypoprothrombinemic group was at times severe, and it was fatal in one. In these instances more than one factor may be operative. This is illustrated by Owren's case of a 5-year-old boy with a Quick one-stage prothrombin time of 15 to 16 seconds but only a 35% content of proaccelerin.[9]

A normal clotting time does not exclude a hemorrhagic diathesis in which a defect in thromboplastin formation may actually exist. Thus, 40% of our patients were found to have defects in thromboplastin formation. Jürgens, as quoted by Wintrobe,[10] also observed delayed prothrombin consumption in cases of classic von Willebrand hemorrhagic diathesis. The defect in thromboplastin formation in our patients was frequently corrected by washed platelets. Three patients with excellent prothrombin consumption tests had abnormal thrombin generation tests which were corrected with platelets. Washed normal platelets did not improve thrombin generation in proved AHG deficiency. Patients with PTA deficiency may resemble patients with thrombopathic states. PTA factor, however, is readily supplied by stored blood.

The experimental work of Jürgens[11] indicated that agglutination of platelets was markedly promoted by histamine, which leads to localized fibrin flocculation. Sanford and others[12] demonstrated the absence of an in vitro action of histamine on dog or human platelets, but an increased clumping and disintegration followed intravenous injection which was directly related to the degree of reaction experienced by the patient. Heparin therapy did not prevent this action. Two patients with impaired prothrombin consumption correctible with platelets were given histamine intravenously. The results in one correlate with the concept of a thrombasthenia which was corrected through the action of histamine on platelets possibly mediated as above.

The in vitro effects of added platelets suggested that transfusions with use of silicone-treated or plastic equipment might be more effective than ordinary glass-contained blood, and this appeared to be true. The possible trigger role[13] of the platelet, which may influence directly or indirectly the activation of AC-factor and stable prothrombin accelerators, suggests an additional reason to use every measure to ensure maximum platelet delivery.

Table 8.—*Results of Steroid Therapy in Thrombopathic States*

Case No.	Status	Steroid	Notes and Results
3	Total extraction, severe bleeding	ACTH by continuous intravenous drip	Three units fresh blood and protamine sulfate given without effect; bleeding stopped in 2 hr.; trial repeated 3 times
4	Tooth extraction	Prednisone, 20 mg./day, begun 48 hr. preoperatively	Oozed for 1 mo. with previous extractions; normal without excessive bleeding this occasion
9	Repeated massive gastrointestinal hemorrhages	ACTH by continuous intravenous drip and orally given cortisone for 1 and 2 wk. respectively	Prolonged bleeding time and melena unimproved
12	1. Dilatation and curettage 2. Menorrhagia	1. ACTH by continuous intravenous drip 2. Prednisone, 15-20 mg./day	1. Normal course after dilatation and curettage 2. Flooding menses prevented by treatment, beginning 48 hr. premenstrually; Bleeding returned with omission of drug
13	1. Tooth extractions. 2. Cholecystectomy with common duct stone	1. Hydrocortisone, 60 mg./day 48 hr. preoperatively 2. Hydrocortisone, 60 mg./day; intravenous drip, ACTH	1. Uneventful compared with prior experiences according to dentist and patient 2. No hemorrhage; severe thrombophlebitis with pulmonary embolus
15	1. Nearly constant gingival oozing, especially nocturnal 2. Delivery	1. Prednisone, 30 mg./day 2. Intramuscularly given hydrocortisone and continuously given ACTH	1. Complete cessation in 36 hr. 2. Post partum immediate hemorrhage; given 1,000 ml. of blood; further hemorrhage controlled with continuously given ACTH
16	Multiple extractions	ACTH given by continuous intravenous drip, followed by prednisone	Normal postoperative course
18	1. Gingival hemorrhage 2. Gingival and nasal bleeding	1. ACTH by continuous intravenous drip for 24 hr. 2. Hydrocortisone 60 mg./day; later prednisone, 15-20 mg./day	1. Bleeding unaffected; transfusions also given 2. Bleeding stopped in 3 days and has been controlled by intermittent therapy for 1½ yr.; many transfusions previously
22	Post-thyroidectomy hemorrhage	ACTH by continuous intravenous drip	Progressive oozing and death due to hemorrhage 2½ hr. after giving ACTH
23	Tooth extraction	Hydrocortisone, 60 mg./day	Normal postextraction course, as compared with previous experiences of 3-7 days bleeding
24	Repeated epistaxis and bruises	Prednisone, 15-20 mg./day for 10-20 days	Bleeding controlled; courses of treatment required every 2-3 mo.; maintained well for 2 yr. to date

My experiences from 1949 to the time of writing in treating patients having various types of purpura with ACTH indicated its effectiveness in the frequent control of purpura without necessarily affecting the platelet count. Others have recorded similar observations.[14] The exact mechanism of control of capillary hemorrhage is not clear. Cosgriff and others[15] demonstrated hypercoagulability of the blood, lasting 7-15 days after treatment, in association with ACTH and cortisone therapy. The improvement in my patients did not always correlate with correction of bleeding time or prothrombin consumption. Jacobson[14] demonstrated a reduction in bleeding time after the use of cortisone and ACTH in patients with pseudohemophilia. I am continuing to use prednisone (Meticorten) or hydrocortisone (Compound F) in the preoperative preparation of these patients, a number of whom are not included in this report. I have recommended the following course in preextraction cases: preparation of precasted bite-plates for extensive extractions, preparation with steroids (60-120 mg. of hydrocortisone or 30 mg. of prednisone daily) for 48 hours preoperatively, packing with absorbable surgical sponge (Gelfoam) and topical thrombin, and suturing. Steroid administration is gradually reduced over one week. Bleeding has been reduced, as compared with patients' previous experiences. This far, the mechanism appears nonspecific. Thrombophlebitis is the chief complication and appears to be more severe than in normal states.

Theoretically, protamine sulfate would be specific in rare instances where increase in heparin-like substance or defect of platelet factor 3[2a] exists. My results suggest that a test dose should be sufficient, with hemorrhage promptly arrested if the drug is effective. Intravenously given conjugated estrogenic substances (Premarin) has been used in scattered cases and is most helpful when labile prothrombin defect coexists. Controlled experiments during serious bleeding are difficult to set up; further, variability from episode to episode is most difficult to correlate.

Summary

A clinical approach to the evaluation of the mild or questionable bleeder has been studied in 24 patients with thrombopathic states. A searching history is the best screening test. A positive family history was obtained in two-thirds of the patients and was usually manifested as a simple dominant trait. In one family a recessive (x-borne) type of inheritance was demonstrated in which a platelet-plasma thrombopathic state was present associated with mild hemophilia.

A variably prolonged bleeding time was the most frequent laboratory finding, whereas a history of excessive bleeding after tooth extraction was the most important anamnestic observation. Other important symptoms were easy bruisability, epistaxis, gingival bleeding, and menorrhagia. Purpura was absent. Approximately one-half of the patients at some time had abnormal prothrombin consumption and/or thrombin generation.

A mild to moderate reduction in the one-stage prothrombin content, due to AC globulin (conversion accelerator, V factor, labile factor) deficiency, was noted in about one-fourth of the patients and may be only one facet of a potentially serious defect in hemostasis. One post-thyroidectomy fatality occurred in this group.

Classification is difficult and frequently artificial since the variation in findings among bleeders in a single kindred group could frequently lead to multiple diagnoses. The cases in general fit the so-called thrombopathic state of von Willebrand and include variable abnormalities of labile prothrombin accelerator, platelet prothrombin accelerator, and platelet co-thromboplastin defect. Three bleeders, not reported on, had normal clotting times and slightly prolonged bleeding times; two were shown to have antihemophilic globulin (AHG) deficiency, and one had plasma thromboplastin component (PTC) deficiency. From the standpoint of management it is important to evaluate the individual and define the defect in terms of a therapeutic approach.

Therapy is often difficult, and whole blood transfusions are usually without direct benefit. The use of silicone-treated and plastic-protected blood is of aid. Adrenal steroids were used in 12 patients and were effective in 10. The effect is nonspecific and may require two to three days to become manifest. Thrombophlebitis is a serious complication of this therapy. Control of bleeding persisted for several weeks after stopping administration of the drug, so that intermittent therapy provided excellent control of chronic epistaxis, menorrhagia, and gingival bleeding. Combination of regularly spaced transfusions of fresh blood or plasma in plastic bags, adequate local measures, plus steroids is optimal treatment of the thrombopathic hemorrhagic state. Therapy with conjugated estrogenic substances (Premarin) is indicated when deficiency of labile prothrombin accelerator is present.

Addendum

Since this paper was read on Nov. 29, 1956, an additional member of family no. 2 has been studied and is shown to have a definite mild antihemophilic globulin deficiency, demonstrating in this family a combination of thrombopathic states with hemophilia.

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HORMONES, VIRUSES AND CANCER.—The administration or withdrawal of hormones can stimulate or control the growth of certain cancers of the human breast, prostate, and thyroid. In animals, too, it has been shown that the growth of cancers can be stimulated by disturbing endocrine balances and that often these cancers can be controlled by restoring normal endocrine balance. Prolonged and excessive stimulation of a target organ by a trophic hormone first causes hyperplasia of the animal's target organ, then formation of benign nodules, and then cancers. At first these cancers may be dependent for their continued growth on the persistence of the endocrine imbalance that produced them but, finally, if the imbalance persists, autonomous cancers develop and can grow in animals in which there is no longer any endocrine imbalance; for example, the production of cancer of the thyroid by feeding thiouracil. . . . Excessive stimulation by a trophic hormone stimulates a cell to divide but, before it divides, the cell must reproduce its normal quota of nucleoprotein. A stimulated cell's avidity for nucleoprotein may become so great that the cell not only reproduces its own nucleoproteins as fast as it can but also gobbles up any virus-like particles of nucleoprotein with which it comes in contact. These particles, incorporated into the chromatin of the cell, might disturb the cell's genetic balance. Thus exposure of a trophin-stimulated cell to a virus might hasten the development of the nuclear changes that lead to autonomy of growth. Viruses may be part of the material out of which cancers are built.—George Crile Jr., M.D., A Speculative Review of the Role of Endocrine Imbalances in the Genesis of Certain Cancers and Degenerative Diseases, *Journal of the National Cancer Institute,* February, 1958.

J.A.M.A., April 26, 1958

MITRAL INSUFFICIENCY—ITS QUANTITATION BY CARDIAC VENTRICULOGRAPHY

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Thirty-two patients had cardiac ventriculographic study for demonstration of the presence and degree or absence of mitral regurgitation. Four patients showed no atrial opacification, and at surgery these four were proved to have pure mitral stenosis without any mitral regurgitation. Surgical treatment of mitral stenosis demands an effective procedure for the preoperative assessment of the presence and degree or absence of mitral regurgitation. Any degree of regurgitant opacification of the left atrium during cardiac ventriculographic study is considered significant of mitral valvular insufficiency. Cardiac ventriculography does not lend itself to exactitude of interpretation but rather to estimation only of the amount of regurgitant opaque substance issuing through the mitral valve and the quantitation of mitral insufficiency. It also appears to be a reasonably efficient procedure for evaluating the effectiveness of surgical procedures designed for the correction of mitral insufficiency.

The need for an accurate clinical method for quantitation of mitral regurgitation has long been recognized and has been an elusive problem. Since the advent of surgical treatment of mitral stenosis,[1] the importance of an effective procedure for the preoperative assessment of the presence and degree or absence of mitral regurgitation has become manifest. Anatomic changes present in the mitral valve leaflets inducing regurgitation may preclude successful mitral valvular mobilization. Since in our institution mitral stenosis is now approached surgically through an incision on the right side and mitral insufficiency through an incision on the left side, it has become doubly important to establish with certainty the preoperative diagnosis.[2]

Although catheterization of the left side of the heart has proved of inestimable value in the diagnosis of mitral and aortic stenosis, it has not been adequate in the evaluation of mitral regurgitation.[3] Cardiac ventriculography has provided a more accurate means of objective assessment of the presence and degree of mitral valvular insufficiency. Cardiac ventriculography is also an effective means for evaluating the efficaciousness of surgical procedures designed for correction of mitral insufficiency.

Smith, Cregg, and Klassen[4] have discussed the diagnosis of mitral regurgitation by cardioangiography. These authors employ the term "cardioangiography," while we prefer the term "cardiac ventriculography" for the procedure of direct transthoracic needle puncture opacification of the ventricles of the heart. Both terms refer to the same procedure.

Smith and his associates[4] studied 20 patients with consideration of the state of competency of the mitral valve, 10 patients presenting evidence of a competent mitral valve and 10 showing varying degrees of mitral regurgitation. Anatomic evidence of the status of the mitral valve was available in 6 of the 20 cases studied. These authors report essential agreement relative to the competency of the mitral valve between cardioangiographic findings and subsequent anatomic findings at surgery or autopsy in five of these six patients.

The purpose of the present report is to describe experience in the estimation of mitral insufficiency by cardiac ventriculography and to present observations as to the correlation of the ventriculographic quantitation of mitral insufficiency with the operative findings at the time of surgical exploration of the mitral valve.

Methods and Materials

Our technique of cardiac ventricular puncture and radiologic visualization of the ventricular chambers (cardiac ventriculography) has been reported in a previous publication by Lehman, Musser, and Lykens.[5]

Of 86 patients who have had satisfactory cardiac ventriculographic study specifically for the determination of the presence or absence of mitral valvular regurgitation, 32 have undergone surgical exploration of the mitral valve. The cardiac ventriculography studies of these 32 patients have been carefully graded with respect to the presence or absence of any regurgitant opacification of the left

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atrium and the estimated quantitation of such opacification. The following method of grading is used: 0, no atrial opacification; 1+, trace; 2+, slight; 3+, moderate; and 4+, massive. These four grades of regurgitant opacification of the left atrium are illustrated in figure 1.

Any degree of regurgitant opacification of the left atrium was considered significant of mitral valvular insufficiency, since it has been our repeated observation in animal experiments and in a series of 110 cardiac ventriculographies (left) so far performed at our institution that the competent mitral valve will not permit of regurgitant opacification of the left atrium under the conditions of cardiac ventriculography as employed by us. In the grading of the patients presenting evidence of regurgitant opacification of the left atrium, due attention was paid to the size of the left atrial chamber, since, as Smith and co-workers[4] have pointed out, the degree of atrial opacification should be expected to vary with the volume of the left atrium, given the same degree of actual leak through the mitral valve. The grading of mitral insufficiency as adjudged by the surgeon at the time of exploration of the mitral valve is as follows: 0, no regurgitation; 1+, 1-5 cc. per beat; 2+, 6-10 cc. per beat; 3+, 11-40 cc. per beat; and 4+, over 40 cc. per beat.

While the ungloved examining finger has definite limitations in its ability to quantitate varying amounts of regurgitant stream issuing through the mitral valve, there is at present no better available method of surgical evaluation of dynamic mitral valvular leak. Any regurgitant jet through the mitral valve estimated at over 10 cc. per beat is considered at our institution to be of dynamic clinical significance. A leak of 1+ is represented by a very small but high-pressure jet issuing from the left ventricle with each systole; an insufficiency of 4+ is one in which a large surge of blood enters the atrium with each ventricular contraction.

Results

Of the 32 patients having both satisfactory ventriculographic study for demonstration of the presence and degree or absence of mitral regurgitation and for subsequent surgical evaluation of the status of the mitral valve, there were four patients who showed no atrial opacification, and at surgery these four were proved to have pure mitral stenosis without any mitral regurgitation. Of the remaining 28 patients, some degree of atrial regurgitation was noted on ventriculographic study in each, and, at surgical exploration of the mitral valve, each case presented some degree of mitral regurgitation.

Of these 28 patients presenting ventriculographic evidence of mitral insufficiency confirmed at surgery, there was exact correlation between ventriculographic estimation and surgical evaluation of the degree of mitral insufficiency in 17 patients. (In 2 patients, the grading was 1+; in 1, 2+; in 12, 3+; and in 2, 4+.) Of the remaining 11, the deviation between ventriculographic and surgical estimation was no greater than 1+ in 8. In one case, the ventriculographic estimation was two degrees greater than the surgical estimation, and in one case it was two degrees lower than the surgical estimation. In the other case, the operative report did not record a surgical grading.

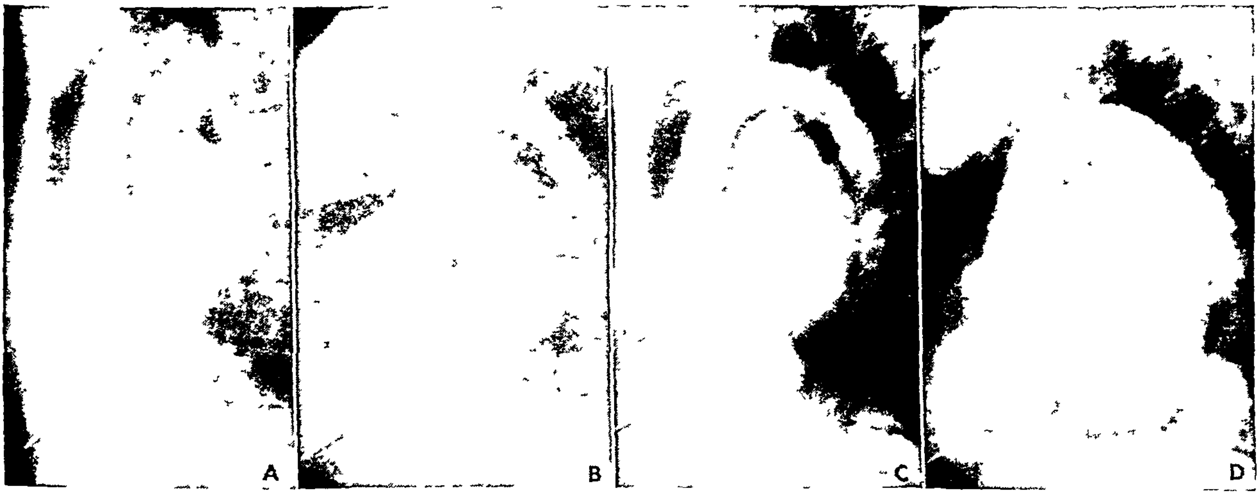

Fig. 1.—Cardiac ventriculographies showing four grades of regurgitant opacification of left atrium. *A*, grade 1, *B*, grade 2, *C*, grade 3, and *D*, grade 4.

Comment

The determination of the degree of mitral insufficiency by cardiac ventriculography must obviously be an estimation only. Variations in the intrinsic size of the left atrium and the dilution effects of the resultant wide range of blood volume in various left atrial chambers influence the opacification of the left atrium produced by regurgitation of radiopaque medium through the mitral valve. The procedure does not lend itself to exactitude of interpretation but rather to estimation only of the amount of regurgitant opaque substance issuing through the mitral valve. When it is considered that the surgical evaluation of the degree of mitral insufficiency also is an estimation, it is not surprising that some disparity exists between ventriculographic and surgical quantitation of mitral regurgitation. Variations in stroke volume, pulse rate, cardiac output, stability of blood pressure, and production of arrhythmias, which may be incident to either procedure, are factors which might well considerably modify for ventriculography on the one hand the degree of regurgitant opacification observed in the left atrium and on the other hand the strength, volume, and force of the regurgitant stream of blood issuing through the mitral valve at surgery. It is, therefore, not astonishing that exact correlation between ventriculographic and surgical findings is not obtained in all cases.

Cardiac ventriculography appears to be a reasonably efficient procedure for the evaluation of reduction in mitral regurgitation following surgical procedures designed for the correction of mitral insufficiency. Figure 2 illustrates the preoperative ventriculographic study of a patient who, at surgery, presented mitral stenosis and a mitral insufficiency graded as 3+. The postoperative ventriculographic study, performed 14 days after combined mitral commissurotomy and cross polar plication of the mitral annulus, demonstrates in this case a marked reduction in the regurgitant opacification of the left atrium.

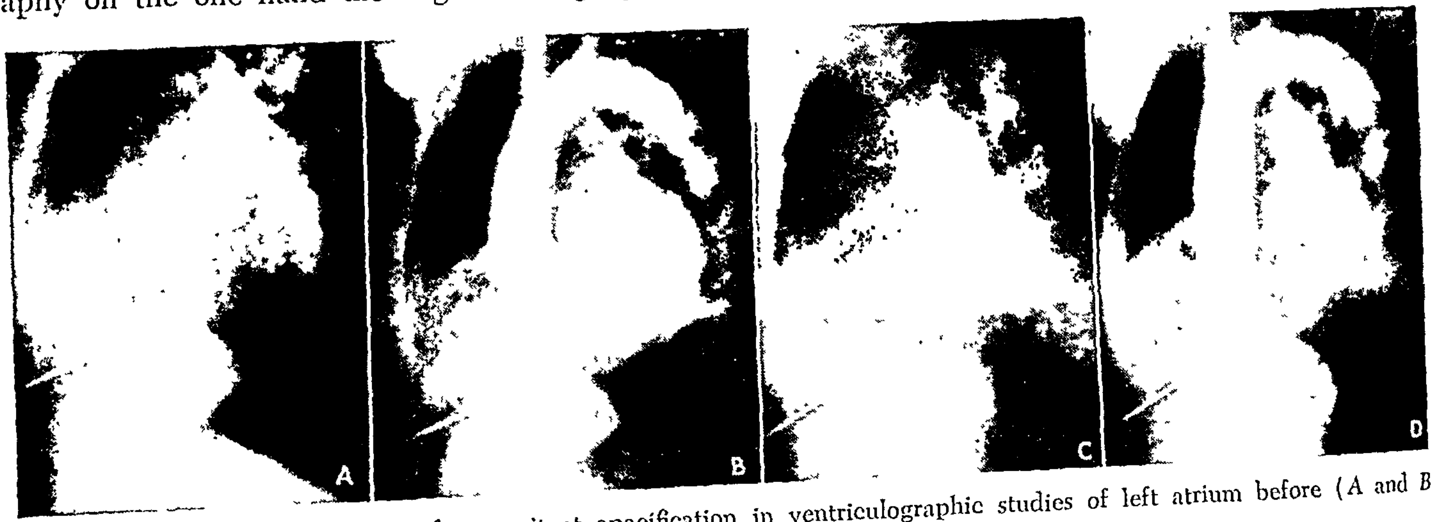

Fig. 2.—Comparison of degree of regurgitant opacification in ventriculographic studies of left atrium before (*A* and *B*) and after (*C* and *D*) surgery for correction of mitral insufficiency.

Summary

Cardiac ventriculography appears to provide a fairly accurate method for objective demonstration of the presence of mitral insufficiency. The reliability of this procedure in the quantitation of mitral insufficiency is apparently adequate for purposes of detection of clinically significant degrees of mitral insufficiency.

Considering operative findings at surgical exploration of the mitral valve as indicative of the presence or absence of mitral regurgitation, there were no false-positive ventriculographic diagnoses of mitral insufficiency in a study of 32 patients. In the same group of patients, there was exact ventriculographic correlation with surgical findings in 21 patients. While discrepancies between the estimated ventriculographic and estimated surgical quantitation of mitral insufficiency occurred in 11 cases, these discrepancies were not, in our opinion, of sufficient magnitude to invalidate cardiac ventriculography as a reasonably accurate clinical method of quantitating mitral insufficiency.

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COMMISSUROTOMY FOR MITRAL STENOSIS

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The histories of 85 cardiac patients have been reviewed in order to define more sharply the indications and contraindications for mitral commissurotomy. The operation was completed in 72 patients without operative deaths, and three pregnant women in whom the operation was completed survived without fetal mortality. The effectiveness of the operation was clearly shown by comparing the preoperative and postoperative status of the patients with respect to the New York Heart Association functional classification. Case histories are given for five of these patients who died from 4 to 48 months after commissurotomy. The operation was not completed in 13 patients who presented various difficulties. Case histories were given for this group, in which four deaths occurred within the immediate postoperative period. In one instance the entire left atrium was found to have been converted into a smooth, bone-like mass through which entry was impossible. Mitral commissurotomy has become an effective, safe procedure for competent surgeons in well-selected patients. But when the heart is greatly enlarged and atrial fibrillation is present, when the auscultatory findings are not classic, when other valvular lesions exist (notably mitral insufficiency or aortic stenosis), or when the electrocardiogram shows left axis deviation, careful evaluation by other methods should be done, including fluoroscopy, phonocardiography, and catherization.

Commissurotomy is now an established procedure of merit in the treatment of mitral stenosis. General agreement has been reached regarding indications for surgery, except for the inclusion of asymptomatic patients. Contraindications are less well defined, and little attention has been directed toward those patients in whom surgical exploration of the mitral valve is done but in whom commissurotomy cannot be performed for various technical difficulties encountered at operation. The purpose of this report is to present the results of our experiences with mitral commissurotomy, to emphasize certain contraindications for operation, and to describe technical difficulties which preclude commissurotomy and contribute to mortality.

Population of Study

An analysis of the results of mitral commissurotomy in the treatment of patients with mitral stenosis has been made through a review and postoperative evaluation of patients operated on at Duke Hospital during the period from January, 1952, to July, 1956. Current follow-up data are available on nearly every patient. These patients constituted both private and public ward subjects at Duke Hospital, and the operations were largely done by one surgeon. Attention has also been directed to a group of patients who were operated on but in whom commissurotomy was not done. The cases of these latter patients demonstrate some of the problems encountered in mitral valve surgery.

During the period of 1952 to 1956, 85 patients were operated on at Duke Hospital, with mitral commissurotomy accomplished in 72. Exploration was done in 13 additional patients, but commissurotomy was not feasible because of an unsuitable valve or other technical difficulties. These 13 patients are considered separately. A second commissurotomy was performed in one patient 26 months after the initial operation because the valve had not been adequately opened during the first procedure.

The patients who underwent commissurotomy included 55 women and 17 men, a ratio of approximately three to one. On the basis of the New York Heart Association functional classification, preoperatively 41 patients were placed in class 2, 29 in class 3, and 2 in class 4. No patients in class 4 were denied operation. Three pregnant women were included in whom operations were performed at three, four, and five months of pregnancy without maternal or fetal mortality.

There were no operative deaths in the 72 patients. This reflects the opinion that patients in class 3, functional capacity, or in class 2 approaching class 3 are the best candidates for surgery.[1] Ellis and Harken[2] have reported a 0.6% operative mortality rate in their second 500 patients who were judged better risks for operation. Mitral commissurotomy has thus become a relatively safe procedure when done by competent surgeons, and the operative mortality is reaching a minimum in

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properly selected patients. Among the 72 patients in whom commissurotomy was done, there were 7 known deaths during the follow-up period. Among the 13 patients in whom only exploration was done, there were 4 operative deaths and 3 additional patients are known to be dead.

The average age at time of commissurotomy was 36 years, for both males and females. The age of the patients in class 3 and 4 averaged 38 years, as compared to 35 years for the patients in class 2. The youngest patient in the series was 19 years of age, while the oldest was 57.

Comparison of Preoperative and Postoperative Data

A history of rheumatic fever, considered to be reliable, was present in 31 (43%) of 72 patients. Seven of the 31 patients had chorea as the initial major manifestation of rheumatic fever; these were all women. A composite analysis of these patients reveals the average age at the first attack of rheumatic fever to be 11 years, with an asymptomatic period of 20 years, the onset of cardiac symptoms at 31 years, and commissurotomy performed 5 years later at 36 years of age. Mitral commissurotomy has become a means to interrupt the progression in the natural history of the disease, as documented by Bland and Jones.[3]

Analysis of some manifestations of rheumatic heart disease and mitral stenosis (table 1) revealed one or more episodes of congestive heart failure in 31 (44%) of the 72 patients, with this being more frequent in the patients in class 3 and 4 (27 [87%] of 31). Hemoptysis occurred in 27 (38%), being slightly more frequent in patients in class 3 than those in class 2. Auricular fibrillation occurred in 33 (46%) of the patients preoperatively. In nine patients having sinus rhythm, auricular fibrillation occurred during the immediate postoperative period. Conversion to normal sinus rhythm was accomplished in six of the nine patients. Systemic emboli, often multiple, occurred in 12 patients (16%) preoperatively; only 1 of these 12 patients has had an embolus postoperatively. In two patients without prior emboli, cerebral emboli occurred as a complication of operation. One patient without preoperative embolization died 41 months after operation from congestive heart failure and multiple systemic emboli.

TABLE 1.—*Preoperative Manifestations of Mitral Stenosis*

Class*	No. of Patients	Congestive Failure, No.	Hemoptysis, No.	Auricular Fibrillation, No.	Systemic Emboli, No.
2..............	41	5	15	16	4
3..............	29	25	12	16	8
4..............	2	2	0	1	0
Total.......	72	32	27	33	12

* New York Heart Association functional classification.

A calcified mitral valve was found in 19 patients at operation (9 of 41 patients in class 2, 8 of 29 patients in class 3, and both patients in class 4). This was found twice as frequently in men as in women. Valvular calcification was detected roentgenographically in 21% of these patients preoperatively. Slight degrees of valve calcification had no appreciable effect on the subsequent course of the patient, while heavy calcification was noted in those patients who did less well.

TABLE 2.—*Preoperative Electrocardiographic Findings*

Class*	No. of Patients	Right Ventricular Hypertrophy	Right Axis Deviation	Digitalis Effect	Abnormal P Wave	Normal Finding
2..............	41	6	14	24	9	5
3..............	29	3	14	21	4	0
4..............	2	2	2	2	0	0
Total.......	72	11	30	47	13	5

* New York Heart Association functional classification.

Analysis of the preoperative electrocardiograms in the 72 patients (table 2) revealed right ventricular hypertrophy in 11 patients (15%), right axis deviation in 32 (42%), and abnormal P waves of the broad notched variety in 13 (18%). One patient presented the unusual finding of the Wolff-Parkinson-White syndrome, and another patient exhibited complete heart block. Five patients had normal electrocardiograms.

Radiologic examination in those patients who underwent commissurotomy nearly uniformly revealed an enlarged left atrium, prominent pulmonary vasculature, and, in 40%, right ventricular enlargement. No consistent change in heart size was observed postoperatively by comparison of roentgenograms. Postoperative electrocardiograms also showed little change from the preoperative tracings. Improvement in heart murmur, heart size, or electrocardiographic picture was less striking than symptomatic improvement in the successfully treated patient.[4]

In 33 patients, cardiac catheterization was performed preoperatively. In class 2, among 16 patients the average mean pulmonary capillary pressure was 21 mm. Hg (range 13-35 mm. Hg) with a rise to 31 mm. Hg after exercise (range 22-45 mm. Hg). The average mean pulmonary artery pressure rose from 37 mm. Hg (range 17-66 mm. Hg) to 54 mm. Hg (range 23-84 mm. Hg) with exercise. The 17 patients in class 3 and 4 had slightly higher pressures (average mean pulmonary capillary pressure of 24 mm. Hg with rise to 35 mm. Hg after exercise and average mean pulmonary artery pressure of 36 mm. Hg with rise to 59 mm. Hg). Most of the patients, on the basis of pressures, were in Holling and Venner's[5] stage 3 and 4 (valve size 0.5-1.0 sq. cm.).

Operative and postoperative complications included a depressive psychosis in 1 patient, auricular fibrillation in 9 patients, postcommissurotomy syndrome in 19 patients, and cerebral embolism at time of operation in 2 patients (1 showed mild embolism without significant residua, while the other patient continues to have speech difficulty and mild motor disturbance two years postoperatively). The postcommissurotomy syndrome consisted chiefly of fever, pleuritis, and pericarditis in 19 patients (26%), and, as outlined by Dresdale and co-workers,[6] it might better be termed "postcardiotomy syndrome." Only 3 of these 19 patients had auricular muscle biopsy evidence of "active carditis." Eighty-three per cent of the patients in the series had "inactive" auricular muscle biopsies. The presence of positive biopsies had no obvious influence on the patients' subsequent clinical course. All seven patients who died after operation had negative auricular muscle biopsies.

Follow-up Data

Complete follow-up data to Jan. 1, 1957, are available for 70 of the 72 patients; the remaining 2 patients are known to be living but are not available for personal study. Postoperative observations have varied from 6 to 54 months, the mean duration of follow-up being 24 months for the patients in class 2 and 42 months for those in class 3 and 4. In table 3 the follow-up data are summarized. Ninety per cent of the preoperative class 2 patient group are improved, with 66% now placed in class 1. Of the preoperative class 3 and 4 patients, 74% are improved, 29% are grouped in class 1, and 39% are grouped in class 2. This degree of improvement is similar to that reported by Kuzman and associates,[7] Ellis and Harken,[4] and Bailey and Bolton.[8] The course of disease in two patients suggests that restenosis has occurred; one patient has been submitted to operation twice. Seven patients (two in class 2 and five in class 3 and 4 preoperatively) in the commissurotomy group are known to be dead.

Commissurotomy—Report of Cases

Case 1.—A 53-year-old woman (class 3) died approximately six months after operation in congestive heart failure with hyponatremia and, probably, pulmonary emboli. A calcified mitral valve and significant mitral regurgitation were found at operation.

Case 2.—A 22-year-old male (class 2) died 37 months postoperatively in acute pulmonary edema. This patient had combined aortic and mitral stenosis and auricular fibrillation; mitral regurgitation was noted at operation.

Case 3.—A 26-year-old woman (class 3), whose mitral stenosis was complicated by complete heart block, probably congenital, and mild diabetes mellitus, died about four months after operation in congestive heart failure. Mitral regurgitation was moderately increased after splitting the valve.

Case 4.—A 51-year-old woman (class 3) died approximately 48 months after operation of congestive heart failure. This patient presented a tight mitral stenosis, but, because of the funnel-shaped, calcified valve configuration, only partial relief of obstruction was possible. A history of cerebral embolus and auricular fibrillation was noted prior to operation, and her immediate postoperative course was complicated by a depressive psychosis severe enough to require temporary confinement in a mental hospital.

Case 5.—A 49-year-old male (class 3) with a heavily calcified valve noted at operation obtained temporary yet significant improvement in symptoms postoperatively. Death occurred 41 months after operation from severe congestive failure and multiple systemic emboli. Atrial fibrillation without history of embolism was present preoperatively.

Comment.—Five of these seven patients had atrial fibrillation, four had mitral insufficiency, four had calcified valves, two had very large hearts, and two had combined aortic stenosis and mitral valve disease. These patients presented most of the factors which have been considered to reduce the chance of operative success, such as marked cardiac enlargement, significant mitral insufficiency, calcified mitral valve, aortic stenosis, prolonged congestive heart failure, atrial fibrillation, and embolism.[9]

Table 3.—*Follow-up Data on Patients Who Received Commissurotomy for Mitral Stenosis*

Period Since Operation, Mo.	No. of Patients	Postoperative Functional Class 1	2	3	4	Improved, No.	Not Improved, No.	Deaths, No.
Preoperative Functional Class 2 (41 Patients)*								
6	4	1	2			2	1	1
12	8	7	1			8		
18	8	8	0			8		
24	4	1	2	1		3	1	
30	3	1	2			3		
36	7	3	3			6		1
42	4	3	1			4		
48	1	1				1		
54	2	2				2		
Total	41	27	11	1	0	37	2	2
Preoperative Functional Class 3 and 4 (31 Patients)								
6	3		1			1		2
12	2	1	1			2		
18	3	1	2			3		
24	3	2	1			3		
30	1		1			1		
36	2		1			1		1
42	4		3			3		1
48	9	2	2	3	1	6	2	1
54	4	3		1		3	1	
Total	31	9	12	4	1	23	3	5

* Current follow-up data not available for two patients.

Exploration Only—Report of Cases

The 13 patients in whom exploration was done but in whom commissurotomy could not be accomplished presented some interesting findings. The entire operative mortality has been contributed by this group. Less than 50% of these patients are alive, as compared to 90% of the patients who underwent commissurotomy. Of these 13 patients, 4 died in the immediate postoperative period and 3 died later, 1 at 1 month, 1 at 10 months, and another at 27 months after operation. Of the remaining six patients, five appear improved at the time of writing, not from surgery but through better patient cooperation and stricter medical management. Brief summaries of the cases of these patients follow.

Case 1.—A 31-year-old male (class 3) was found at operation to have a thick, boggy, adherent pericardium, suggesting acute inflammation and edema. Operation was not attempted. This patient subsequently died three days after operation, and postmortem evidence showed acute rheumatic carditis, chronic congestive failure, and cirrhosis of the liver. His preoperative laboratory data included a normal hemoglobin level, white blood cell count, sedimentation rate, and unremarkable antistreptolysin-O titers (50-166 units). This illustrates the difficulty in diagnosing rheumatic carditis from laboratory data.

Case 2.—A 45-year-old woman (class 3) was found at operation to have a valve so anatomically arranged that commissurotomy was not possible. There was only a minor degree of stenosis present. A large clot was noted in the atrium. The operation was further complicated by cardiac arrest for three minutes, during which time massage was done. The patient died five days postoperatively, and at autopsy a ball-valve thrombus was found obstructing the mitral orifice.

Case 3.—A 27-year-old woman (class 2) at operation was found to have a calcified valve in which there was marked mitral insufficiency without significant stenosis. Her preoperative electrocardiogram had revealed right ventricular hypertrophy, and roentgenographically her heart was quite large. Both mitral systolic and diastolic murmurs were heard preoperatively. Postoperatively her course was complicated by hyponatremia, and death occurred seven days after operation from pulmonary embolism.

Case 4.—A 30-year-old woman (class 4) at operation was found to have pronounced mitral insufficiency with a valve orifice estimated to be 3 cm. in diameter. The left atrium was found to be massively enlarged. Roentgenograms disclosed a very large heart, and the electrocardiogram revealed only atrial fibrillation and digitalis effect. Both mitral systolic and diastolic murmurs were present. She presented a history of cerebral embolization and for one month prior to surgery had been treated for suspected subacute bacterial endocarditis. Postoperatively her course was complicated by shock and oliguria and later by hyponatremia. She died 15 days after operation and, at postmortem examination, was found to have predominant mitral insufficiency without significant stenosis. The myocardium revealed healed Aschoff bodies. No evidence of subacute bacterial endocarditis was found at postmortem examination. Multiple small pulmonary emboli and one area of pulmonary infarction were demonstrated.

Case 5.—A 38-year-old male (class 3) at operation had both mitral stenosis and insufficiency in a densely calcified valve whose configuration made opening hazardous in relation to possible increase of insufficiency. A stormy postoperative course was accompanied by atrial fibrillation, electrolyte disturbance, and a toxic reaction to quinidine. The patient died at home one month after surgery.

Case 6.—A 35-year-old man (class 4) was found at operation to have the entire left atrium converted into a hard, smooth, calcified, bone-like mass which made entry impossible. This had been suspected preoperatively from the roentgenogram, and the patient was told that operation might not be possible. This patient died 10 months after operation in cardiac failure. At postmortem examination he was found to have severe mitral stenosis and a distended left atrium filled with calcified thrombus.

Case 7.—A 50-year-old male (class 2) at operation was found to have such a heavily calcified valve that commissurotomy was not possible. Some mitral regurgitation was also present. Preoperative catheterization had revealed a mean pulmonary capillary pressure of 23 mm. Hg and mean pulmonary artery pressures of 39 mm. Hg at rest and 58 mm. Hg after exercise. This patient died 27 months after operation in severe congestive heart failure.

Case 8.—A 47-year-old woman (class 2) had mitral stenosis and slight regurgitation at operation. Her valve was dilated by finger without any actual split being performed. Attempt to incise the commissure with a knife was not done for fear of causing considerable regurgitation due to the anatomic arrangement of the valve. On a careful medical program, this patient has done quite well for nearly six months.

Case 9.—A 55-year-old woman (class 3) presented a loud mitral diastolic murmur with thrill, a mitral systolic murmur, atrial fibrillation, and a massively enlarged heart. Cardiac catheterization revealed a mean pulmonary capillary pressure of 16 mm. Hg and a rise of mean pulmonary pressure from 20 to 29 mm. Hg with exercise. At operation her mitral valve area was at least 3 sq. cm. in area without significant mitral regurgitation. In the year since operation her status has improved slightly with a strict medical regimen.

Case 10.—A 46-year-old woman (class 3) preoperatively presented murmurs of mitral stenosis and insufficiency, atrial fibrillation, enlarged left atrium and right ventricle by fluoroscopy, and right axis deviation by electrocardiogram. Cardiac catheterization revealed a mean pulmonary capillary pressure of 19 mm. Hg and mean pulmonary artery pressures of 25 mm. Hg at rest and 36 mm. Hg after exercise. Operation disclosed predominant mitral insufficiency without significant stenosis. She remains in class 3.

Case 11.—A 42-year-old male (class 2), who presented atrial fibrillation and a history of cerebral embolus, was found at operation to have primarily mitral insufficiency. Both mitral systolic and diastolic murmurs were present. The auricular appendage was removed. Postoperatively, no further emboli have been noted. Attempts to restore normal rhythm have failed because of serious manifestations of quinidine toxicity. The patient remains unimproved.

Case 12.—A 43-year-old woman (class 3), who preoperatively had mitral systolic and diastolic murmurs, moderate left atrial enlargement, and a normal electrocardiogram, was found to have moderate mitral insufficiency with no significant stenosis. Except for the postcardiotomy syndrome, she has done well postoperatively.

Case 13.—A 37-year-old man (class 2), who had a history of cerebral embolus, was found at surgery to have predominant mitral insufficiency with slight mitral stenosis. The auricular appendage was removed. The patient has had no further emboli and is working 36 months postoperatively. He also has auscultatory evidence of probable aortic insufficiency.

Comment.—Of the 13 patients whose hearts were explored without commissurotomy, there were 6 who had primarily mitral insufficiency without significant stenosis, one who had neither significant stenosis nor insufficiency, 3 whose valves were not amenable to correction, 1 with a too heavily calcified valve for commissurotomy, 1 with a densely calcified atrium precluding surgical entrance, and, finally, 1 with acute rheumatic pancarditis. Although Ferrer and associates[10] have discussed the clinical differentiation of mechanical block at the mitral valve from myocardial insufficiency by the catheter technique, the practical problems presented by this group of 13 patients have generally received little attention in clinical reports concerning the results of commissurotomy.

Need for Surgery

In retrospect, some of these patients should not have been operated on, particularly the young man with active rheumatic carditis or the man with the tremendously calcified atrium which made operation hazardous, although the latter patient's symptomatology was so severe that exploration at least was considered worthwhile. In relation to the problem of mitral insufficiency, catheterization of the left side of the heart now provides a tool for evaluating patients suspected of having this lesion.[11] Unusually shaped mitral valves cannot always be detected, although the presence of massive calicification should make this suspected. The last case in the group above was a variant of those discussed by Harvey and associates [12] in relation to the problem of myocardial insufficiency. As outlined by Harvey and associates, these cases can be detected by physiological studies. Consequently, cardiac catheterization of both right and left sides should be resorted to more frequently for objective evaluation especially in the problem patient. The phonocardiogram has been studied in relation to the correlation of Q-1 minus 2-O.S. times with the degree of mitral block and can be helpful for the screening of patients for mitral commissurotomy.[13] (The Q-1 interval refers to the time from the onset of the QRS wave to the onset of maximal vibration of the first heart sound. The 2-O.S. interval is the time from the onset of the second sound to the opening snap. In our experience, a 2-O.S. time less than 0.09 seconds and a Q-1 minus 2-O.S. value greater than minus one, present in the same patient, are suggestive of significant mitral stenosis.)

Black and Harken [14] have enumerated some helpful clues in the determination of the need for surgery in patients with mitral stenosis. Episodes of failure, roentgenographic evidence of pulmonary hypertension, electrocardiographic evidence of right ventricular hypertrophy, difficulty with coitus, episodes of systemic emboli, and severe symptoms in pregnancy are all factors which, as in our experience, have been helpful in the selection of patients for operation. A thorough and carefully done history and physical examination, supplemented by routine diagnostic aids, are, as emphasized earlier by Kuzman and his associates,[7] the basic tools in the evaluation of candidates for mitral surgery.

Little difficulty is offered by the symptomatic patient who presents the classic findings of mitral stenosis with accentuated first heart sound, opening snap, rumbling mitral diastolic murmur and thrill, loud split pulmonary second sound, right axis deviation by electrocardiogram, enlarged left atrium, prominent pulmonary artery, and hypertrophy of the right ventricle. When the heart is greatly enlarged and atrial fibrillation is present, when the auscultatory findings are not classic, when other valvular lesions exist (notably, mitral insufficiency or aortic stenosis), or when the electrocardiogram shows left axis deviation, careful evaluation by other methods, such as with phonocardiogram and catheterization of the right and left sides of the heart, should be done before subjecting the patient to surgery. Fluoroscopic examination may sometimes furnish valuable clues.

The demonstrated safety and effectiveness of mitral commissurotomy in well-selected patients who have mitral stenosis makes accurate evaluation of all suspected cases obligatory in order to choose the suitable candidate and to avoid ill-advised surgery with its higher mortality rates. Surgical exploration of questionable cases should be avoided through first utilizing every diagnostic aid available, and only then, in a minimum number, will exploration be justified.

Summary

Mitral commissurotomy was performed in 72 patients at Duke Hospital with no operative deaths. Exploration was done in 13 additional patients, but commissurotomy was not feasible because of an unsuitable valve or other technical difficulties. Forty-one patients were placed in functional class 2 and 31 in class 3 and 4. Three pregnant women were operated on without maternal or fetal mortality. A prior history of rheumatic fever was present in 43% of the patients, the average age at onset of the first attack being 11 years followed by an asymptomatic period of 20 years. Symptoms of rheumatic heart disease appeared at an average age of 31 years, and commissurotomy was performed at an average age of 36 years. One or more episodes of congestive heart failure, hemoptysis, and atrial fibrillation occurred in nearly half of the patients preoperatively.

Follow-up in 70 of 72 patients revealed impressive improvement in symptoms; 90% of the patients grouped preoperatively in class 2 improved, and 66% were placed in class 1. Seventy-four per cent of the patients in class 3 and 4 were improved, with 29% placed in class 1 and 39% in class 2. Improvement in heart murmur, heart size, or electrocardiographic tracing was less impressive than subjective improvement in successfully treated patients. Operative complications included the postcardiotomy syndrome, which occurred in 26% of the patients without correlation to the auricular muscle biopsy evidence of rheumatic activity. Seven patients are known to be dead, and these patients had clinical findings suggesting less chance of operative success, namely, the association of mitral insufficiency, aortic stenosis, very large hearts, valve calcification, and atrial fibrillation.

The cases of 13 patients whose hearts were surgically explored without commissurotomy reveal some important problems in terms of selection and technical difficulties at operation. This group constituted the entire operative mortality (four deaths) and a low survival rate (less than 50%).

Mitral commissurotomy has become a safe and effective procedure in well-selected patients and offers a means of interrupting the progressive symptoms of rheumatic heart disease and mitral stenosis.

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EFFECT OF SAFFLOWER OIL EMULSION ON SERUM CHOLESTEROL LEVELS IN YOUNG ADULT MALES

ITS USE AS A SUPPLEMENT TO A NORMAL DIET

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The effect of safflower oil emulsion given as a supplement to the usual diet was studied in 24 young men, weekly samples of blood being taken and analyzed for total cholesterol. After an initial period of five weeks, the subjects were divided into two groups who received either safflower oil emulsion or a placebo for seven weeks. At the end of that time the two groups were reversed, so that those who had received the placebo now received emulsion and vice versa. Neither the subjects nor the supervising physicians knew which preparation a given subject was receiving at a given time. The emulsion, containing 65% safflower oil, was given in 15-cc. doses five times daily to a total of 75 cc. each day. Used as a supplement to the usual diet under these conditions, it had no demonstrable depressant effect on the total serum cholesterol levels.

Vegetable oils have received attention recently because of their effect of lowering the levels of serum lipids in man. It seems definitely established that the careful substitution of unsaturated vegetable oils for saturated animal fats in human diets will produce a sustained reduction in total serum cholesterol level.[1] Several unsaturated vegetable oil emulsions are now available. The temptation on all sides has been to assume that they would effectively reduce the serum cholesterol level, when given as dietary supplements, without much change in the patient's regular diet.

The work of several investigators [2] after the first data from Kinsell and Michaels and Ahrens and others [3] has indicated that the amount of fall in the serum cholesterol level is closely allied to the degree of unsaturation of the particular vegetable oil supplied to the subjects under investigation. This has caused a focusing of attention on safflower oil because of its high percentage of linoleic acid and high degree of unsaturation. With an iodine number of about 143, safflower oil is the most unsatu-

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rated vegetable oil available today. But, despite the widespread manufacture and prescription of safflower oil emulsions and despite the fact that large numbers of patients are taking these supplements to their normal diets in hopes of reducing their serum cholesterol levels, very little experimental evaluation of their value as such has to date been published.

Ahrens and others [10] has pointed out the close parallel between the levels of total cholesterol, free cholesterol, and phospholipids in the serum and have shown that a change in total serum cholesterol level is a satisfactory index of a change in levels of all three factors.

The purpose of the present study, therefore, was to investigate the effect on the total serum cholesterol level in 24 normal young male subjects of a safflower oil emulsion given as a supplement to the usual diet.

Material and Method

Selection of Subjects.—Twenty-four young male medical students, averaging 24 years of age (range 22 to 26), were selected to serve as paid volunteers. None had a history or clinical evidence of atherosclerosis or of disordered thyroid function.

Control of Diet.—The habitual diet of each subject was determined by questionnaire before the beginning of the study. The following average composition of the diet was established: total calories, 2,350 (range 1,900 to 3,100); calories derived from fat, 42% (range 34% to 47%); and total daily fat intake, 109 Gm. (range 88 to 119), the great majority of which was animal and hydrogenated vegetable fat. All the subjects were required to adhere to their usual diets as closely as possible during the control and experimental periods. Use of vitamin supplements, the only medication taken previously by any of the subjects, was discontinued.

Experimental Design and Method.—During the entire experiment, serum was obtained weekly by venipuncture from each subject during the fasting state. Each sample was analyzed for total cholesterol level by a modification of the method of Bloor. In general, the cholesterol level determinations were performed on fresh serum on the same day. Occasionally, the serum was frozen at −15 C, and the determination was performed one to six days later.

After a preliminary control period of five weeks, the subjects were divided into two groups. They were matched according to nearest average serum cholesterol level seen thus far in the experiment and were placed alternately into one or the other group. One group of 12 subjects then received a 65% safflower oil emulsion, 15 cc. five times daily (total 75 cc. a day). Thus, these subjects ingested approximately 48 Gm. of unsaturated vegetable oil daily, creating a ratio of unsaturated to saturated fat in their diets of about 1:2. This daily dosage of 75 cc. was chosen because it is the usual maximum dosage advised to produce the desired depressent effect on the serum cholesterol level.

The other group of 12 subjects were given, in the same dosage, a placebo, resembling the safflower oil emulsion in taste and consistency. The compositions of the two materials are as follows: The safflower oil emulsion contained 65% safflower oil, 8% sucrose, and 22% water; as emulsifying agents, polyethylene glycol distearate, polysorbate 80, sorbitan monooleate, sodium lauryl sulfate, and polyoxyethylene sorbitan monopalmitate; artificial flavor; as preservatives, 0.1% sodium benzoate and 0.05% benzoic acid; and as antioxidants, 0.0065% propyl gallate and 0.003% citric acid. The 75-cc. dosage supplied 450 calories. The placebo contained, per 1,000 cc., 100 Gm. of granulated acacia, 1 Gm. of sodium benzoate, 1 cc. of vanilla tincture, 800 Gm. of sucrose, and distilled water. The 75-cc. dosage supplied 240 calories. Standard 15 cc. tablespoons were dispensed to all. The timing of the doses, whether before, during, or after meals, was not regulated.

The experiment was conducted by the double-blind method. Neither the subjects nor the supervising physicians were told whether each individual subject was taking the safflower oil emulsion or the placebo.

After seven weeks of therapy, the two experimental groups were reversed. The group that had taken the safflower oil emulsion then took the placebo, and those who had taken the placebo then took the safflower oil emulsion.

Results

During all phases of the experiment, there was a marked variability from week to week in individual serum cholesterol levels. The average cholesterol level of all 24 subjects, however, remained fairly stable from week to week during the control period. The over-all average total serum cholesterol level in these subjects over a period of five weeks, without therapy, was 192 mg. per 100 cc. (range 117 to 284).

When, after the control period, 75 cc. of the safflower oil emulsion was added daily to the regular diets of 12 subjects, over a period of seven weeks, there was no decrease in the average total serum cholesterol level (table 1). In fact, in 11 of 12 subjects, the average cholesterol level while the safflower oil emulsion was taken was higher than it had been during the control period. The average increase was 17 mg. per 100 cc. (range 1 to 36).

However, the group of 12 subjects who went from a control period to a period of seven weeks during which the sucrose placebo was added to their diets (table 2) also showed a rise in average serum cholesterol level; in 11 of 12 subjects this rise was 23 mg. per 100 cc. (range 6 to 44).

When, at the end of seven weeks, 12 subjects were switched from safflower oil emulsion to placebo, the gradual trend upward in serum cholesterol level continued (table 1). Similarly, in the other 12, when the safflower oil emulsion was substituted for the placebo, the average total serum cholesterol level continued to rise slowly (table 2).

There was no depressant effect on the total serum cholesterol level to be observed from the addition of 75 cc. daily of the safflower oil emulsion to the regular diets of these subjects (see figure).

The safflower oil emulsion used was well tolerated by the subjects. One subject out of each group of 12 developed slight nausea and loose stools during the first week of therapy, but these symptoms did not persist. The subjects reported a slight weight gain (average 2 kg. or 4.5 lb.) during the period of addition of the emulsion to their regular diets.

TABLE 1.—*Weekly Serum Cholesterol Level Determinations in Milligrams per 100 cc. Over Three Treatment Periods in Twelve Subjects (Group 1)*

	Control						Safflower Oil Emulsion								Placebo						
Case / Week No.	1	2	3	4	5	Av.	6	7	8	9	10	11	12	Av.	13	14	15	16	17	18	Av.
1	243	218	256	276	263	257	228	260	248	246	307	248	326	266	256	311	267	303	288	264	282
2	228	243	222	204	210	221	228	222	252	235	...	276	232	241	164	273	267	226	243	229	234
3	198	222	191	228	210	210	198	204	196	216	173	210	243	206	222	260	239	226	208	229	231
4	216	194	198	210	204	204	222	194	222	204	256	171	235	215	219	232	247	175	198	239	218
5	198	184	228	176	235	204	235	189	235	222	204	269	256	229	198	198	214	273	239	217	223
6		187	184	162	222	189	216	189	189	196	189	207	213	200	213	220	239	202	183	159	203
7	204	169	184	179	201	187	204	204	216	225	239	256	204	221	187	...	220	186	223	214	206
8	164	198	187	146	189	177	204	171	201	179	171	179	204	187	187	202	220	198	183	177	195
9	159	176	179	184	184	176	174	154	198	162	184	159	216	178	187	173	188	198	183	198	188
10	150	173	146	159	159	157	194	179	179	192	210	189	210	193	194	288	223	214	183	193	216
11	173	159	157	146	150	157	189	155	204	164	184	179	204	183	189	247	202	183	154	152	168
12	143	121	129	117	134	129	146	113	117	93	146	143	155	130	143	175	166	123	168	125	150
Over-all av.	189	190	188	182	197	189	203	186	205	196	208	206	226	204	197	234	224	209	204	200	211

TABLE 2.—*Weekly Serum Cholesterol Level Determinations in Milligrams per 100 cc. Over Three Treatment Periods in Twelve Subjects (Group 2)*

	Control						Placebo								Safflower Oil Emulsion						
Case No. / Week No.	1	2	3	4	5	Av.	6	7	8	9	10	11	12	Av.	13	14	15	16	17	18	Av.
1	216	284	235	239	276	250	201	243	276	266	252	263	293	256	316	267	311	297	252	223	278
2	256	222	222	194	280	235	263	266	252	280	269	228	289	264	284	260	239	226	208	229	241
3	235	228	222	198	246	226	260	243	284	269	252	289	296	270	235	273	260	273	236	232	252
4	194	194	...	194	222	201	216	235	204	228	216	225	232	222	219	250	214	205	220	198	218
5	196	207	169	194	216	190	210	196	210	194	210	216	228	209	226	239	232	229	252	223	233
6	184	194	157	184	198	183	210	198	192	179	235	210	235	208	210	232	220	208	173	202	208
7	155	159	189	189	216	182	216	198	171	173	216	228	187	198	189	202	208	220	247	175	207
8	173	194	169	204	164	181	164	179	179	189	192	204	216	189	216	220	214	247	214	177	215
9	179	184	184	196	143	173	198	204	204	235	232	216	210	214	225	273	229	297	214	202	240
10	167	171	173	153	194	172	194	184	210	207	266	189	204	207	201	198	239	202	175	214	205
11	179	155	145	173	184	167	150	173	173	173	210	184	194	180	194	183	208	188	198	220	199
12	155	150	173	143	179	160	148	150	150	162	159	125	179	153	164	183	177	202	147	133	168
Over-all av.	191	195	185	180	212	194	203	207	209	215	226	215	230	214	223	232	228	233	211	202	223

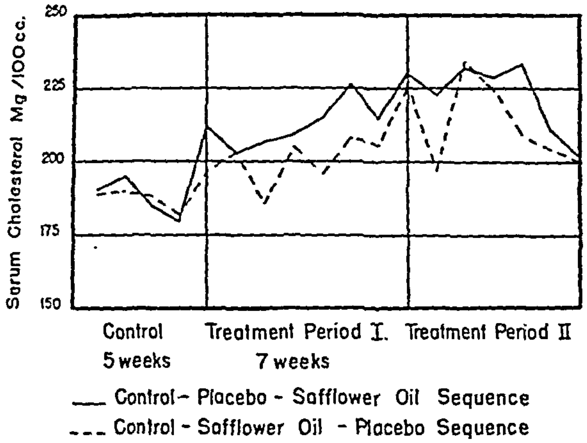
Comment

The ability of supposedly normal young male subjects to respond by a lowering in the serum cholesterol level to a substitution of unsaturated vegetable oil for saturated fat in the diet has been previously established by several other investigators.[2a] The similar effectiveness of safflower oil as a practical supplement to a normal diet, however, has not yet been satisfactorily demonstrated. Armstrong and co-workers[4] have recently published the results of an experiment in which safflower oil, in about the same daily quantity used here, was added as a supplement to the diets of medical students. These authors reported a significant lowering of the serum cholesterol level, but their data were the result of only a nine days' study, with but two determinations of cholesterol level, one before and one after.

The present study failed to show any depressant effect on the serum cholesterol level. There was, in this study, a considerable variability in the individuals' cholesterol levels from week to week. Such variability has appeared to us to be less in older subjects and in patients with elevated serum cholesterol levels and points up the necessity, often neglected, of establishing an adequate control or base-line series of determinations in any such study. A control series of at least five weekly determinations, as done here, would seem necessary.

The reason is uncertain, in the present study, for the gradual rise in the average serum cholesterol level over an 18-week period in both of the groups (control–safflower oil–placebo group and control–placebo–safflower oil group). The increase in calories consumed and seasonal influence (the experiment lasted from mid-summer to early winter) may have played a part. The design of the experiment, however, with each subject serving as his own control, compensated in part for this.

At any rate, the use of safflower oil in the maximum dosage usually recommended for therapeutic purposes produced no depressant effect on the levels of serum cholesterol in these normal young male subjects maintained on their usual diets.



Mean total serum cholesterol levels in two groups of 12 subjects each.

Our results are not to be construed as denying the possible effectiveness of safflower oil as a supplement to diets which have been markedly reduced in their content of animal fat.

Further studies on dietary supplements of safflower oil, other unsaturated vegetable oil preparations, and combinations of these with substances supposed to reduce the serum cholesterol, in normal young subjects, in older subjects with arteriosclerosis, and in subjects with elevated serum cholesterol, are under way and will be reported on later.

Summary

Twenty-four young male subjects were studied during a three-phase experiment lasting 18 weeks. After a five-week control period, they were given, in sequence for six-week to seven-week periods, a placebo, and a daily dietary supplement of 75 cc. of a 65% safflower oil emulsion. The safflower oil emulsion as a supplement to the usual diet had no demonstrable depressant effect on the total serum cholesterol levels of these subjects.

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This study was aided by grants from the Lasker, Hampil, and Fullerton foundations and from the National Heart Institute.

Mrs. Lorraine Rose and Miss Ann Florio provided technical assistance in this study. Mr. Norman Baker, chief pharmacist of the New York Hospital, prepared the placebo.

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BOTULISM.—[This is] a disease which, owing to its spectacular nature and high case-fatality rate, appears to occupy a place out of proportion to its frequency as a cause of death in some regions. Without exception, botulism is caused by carelessness in the preparation and preservation of vegetable and animal foods. Local customs of eating such food uncooked, in the form of salads, watery conserves, poorly cured or inadequately smoked pork and salted fish products create the botulism problem. The risk of botulism exists wherever the telluric incidence of Type A, B, and E spores is high. . . . In California, with an epidemiological intelligence service attuned to botulism, the casual toxin or type of anaerobe was proved in only 69 (33.9%) of 203 outbreaks. . . . All recent observations support as more plausible the explanation that dissimilarities in the foodstuffs customarily responsible for botulism in various parts of the world (processed meats—especially ham, sausages, and other pork products—in Europe; home-preserved vegetables and fruit in the USA; fish in the USSR) may be major determinants of regional case-fatality rates.—K. F. Meyer, M.D., The Status of Botulism as a World Health Problem, *Bulletin of the World Health Organization,* vol. 15, no. 1-2, 1956.

When, at the end of seven weeks, 12 subjects were switched from safflower oil emulsion to placebo, the gradual trend upward in serum cholesterol level continued (table 1). Similarly, in the other 12, when the safflower oil emulsion was substituted for the placebo, the average total serum cholesterol level continued to rise slowly (table 2).

There was no depressant effect on the total serum cholesterol level to be observed from the addition of 75 cc. daily of the safflower oil emulsion to the regular diets of these subjects (see figure).

The safflower oil emulsion used was well tolerated by the subjects. One subject out of each group of 12 developed slight nausea and loose stools during the first week of therapy, but these symptoms did not persist. The subjects reported a slight weight gain (average 2 kg. or 4.5 lb.) during the period of addition of the emulsion to their regular diets.

TABLE 1.—*Weekly Serum Cholesterol Level Determinations in Milligrams per 100 cc. Over Three Treatment Periods in Twelve Subjects (Group 1)*

	Control						Safflower Oil Emulsion								Placebo						
Case / Week No.	1	2	3	4	5	Av.	6	7	8	9	10	11	12	Av.	13	14	15	16	17	18	Av.
1	243	218	256	276	263	257	228	260	248	246	307	248	326	266	256	311	267	303	288	261	282
2	228	243	222	201	210	221	228	222	252	235	...	276	232	241	164	273	267	226	243	229	234
3	198	222	191	228	210	210	198	204	196	216	173	210	243	206	222	260	239	226	208	229	231
4	216	194	198	210	204	204	222	194	222	204	256	171	235	215	219	232	247	175	198	239	218
5	198	184	228	176	235	204	235	189	235	222	204	260	256	229	198	198	214	273	239	217	223
6		*187*	*184*	*162*	*222*	*189*	*216*	*189*	*189*	*196*	*189*	*207*	*213*	*200*	*213*	*220*	*239*	202	183	159	203
7	204	169	184	179	201	187	204	204	216	225	239	256	204	221	187	...	220	186	223	214	206
8	164	198	187	146	189	177	204	171	201	179	171	179	204	187	187	202	220	198	183	177	195
9	159	176	179	184	184	176	174	154	198	162	184	159	216	178	187	173	188	198	183	198	188
10	150	173	146	159	159	157	194	179	179	192	210	189	210	193	194	288	223	214	183	193	216
11	173	159	157	146	150	157	189	155	204	164	184	179	204	183	189	247	202	183	154	152	188
12	143	121	129	117	134	129	146	113	117	93	146	143	155	130	143	175	166	123	168	125	150
Over-all av.	189	190	188	182	197	189	203	186	205	196	208	206	226	204	197	234	224	209	204	200	211

TABLE 2.—*Weekly Serum Cholesterol Level Determinations in Milligrams per 100 cc. Over Three Treatment Periods in Twelve Subjects (Group 2)*

	Control						Placebo								Safflower Oil Emulsion						
Case No. / Week No.	1	2	3	4	5	Av.	6	7	8	9	10	11	12	Av.	13	14	15	16	17	18	Av.
1	216	284	235	239	276	250	201	243	276	266	252	263	293	256	316	267	311	297	252	223	278
2	256	222	222	194	280	235	203	266	252	280	269	228	289	264	284	260	239	226	208	229	241
3	235	228	222	198	246	226	260	243	284	269	252	289	296	270	235	273	260	273	236	232	252
4	194	194	...	194	222	201	216	235	204	228	216	225	232	222	219	250	214	205	220	198	218
5	196	207	169	194	216	190	210	196	210	194	210	216	228	209	226	239	232	229	252	223	233
6	184	194	157	184	198	183	210	198	192	179	235	210	235	208	210	232	220	208	173	202	208
7	155	159	189	189	216	182	216	198	171	173	216	228	187	198	189	202	208	220	247	175	207
8	173	194	169	204	164	181	164	179	179	189	192	204	216	189	216	220	214	247	214	177	215
9	179	184	184	196	143	173	198	204	204	235	232	216	210	214	225	273	229	297	214	202	240
10	167	171	173	153	194	172	194	184	210	207	266	189	204	207	201	198	239	202	175	214	205
11	179	155	145	173	184	167	150	173	173	173	210	184	194	180	194	183	208	188	198	220	199
12	155	150	173	143	179	160	148	150	150	162	159	125	179	153	164	183	177	202	147	133	168
Over-all av.	191	195	185	180	212	194	203	207	209	215	226	215	230	214	223	232	228	233	211	202	223

Comment

The ability of supposedly normal young male subjects to respond by a lowering in the serum cholesterol level to a substitution of unsaturated vegetable oil for saturated fat in the diet has been previously established by several other investigators.[2a] The similar effectiveness of safflower oil as a practical supplement to a normal diet, however, has not yet been satisfactorily demonstrated. Armstrong and co-workers[4] have recently published the results of an experiment in which safflower oil, in about the same daily quantity used here, was added as a supplement to the diets of medical students. These authors reported a significant lowering of the serum cholesterol level, but their data were the result of only a nine days' study, with but two determinations of cholesterol level, one before and one after.

The present study failed to show any depressant effect on the serum cholesterol level. There was, in this study, a considerable variability in the individuals' cholesterol levels from week to week. Such variability has appeared to us to be less in older subjects and in patients with elevated serum cholesterol levels and points up the necessity, often neglected, of establishing an adequate control or base-line series of determinations in any such study. A control series of at least five weekly determinations, as done here, would seem necessary.

The reason is uncertain, in the present study, for the gradual rise in the average serum cholesterol level over an 18-week period in both of the groups (control-safflower oil-placebo group and control-placebo-safflower oil group). The increase in calories consumed and seasonal influence (the tient's blood is grouped and typed here a few days before the date set for operation. The grouping is performed as a slide test and read with the unaided eye. Both cells and serum are examined, and the grouping is determined independently by two workers. The Rh determination also is made as a slide test, and the blood is considered Rh-positive if its cells react against Rh_0 antiserum. When results are doubtful, tube tests are performed.

Calculation of Blood Needs

Necessity for Heparinization.—A major problem is that the machine requires blood collected in a minimum of anticoagulant solution. The usual 120 ml. of A. C. D. solution per unit of blood is too much; the amount of citrate in the solution may produce fatal hypocalcemia. Therefore, blood must be collected in heparin solution, of which 30 ml. of 0.9% sodium chloride solution containing 1,500 U. S. P. units of heparin is used per unit of blood. The bottles are siliconized. One period during the surgical procedure, designated as the "heparinization period," includes the time the patient is undergoing bypass and also the time required for examination, connection of cannulas, observation of results, and so on, extending to the time of protamine administration. During this period only heparinized blood is administered. Because heparinized blood must be fresh when used, the actual amount needed for each patient must be calculated fairly closely.

Separate Factors.—The quantity is derived from three sources: the amount of blood needed for the machine and flow lines; the amount of blood needed for transfusion from the machine during bypass; and the amount of blood needed by the anesthesiologist for transfusion during those brief parts of the period of heparinization before and after bypass.

1. For Machine and Cannulas: The oxygenation system of the Gibbon-type machine is a series of screens, of which the number used is varied in proportion to the calculated oxygen needs of the patient. Nomograms based on the patient's height, weight, and surface area characteristics indicate the blood flow required, which determines the number of oxygenator screens needed; and from that the amount of blood necessary to cover the screens and to fill the flow lines and reservoirs is figured. As an example, for a tiny patient with a surface area of 0.2 to 0.24 sq. m., three screens are needed; therefore, the machine and flow lines require 2 liters of blood.

2. For Transfusion from Machine During Bypass: For the same patient, an extra 500 ml. of blood is kept in the reservoirs of the machine for transfusions from the machine during bypass. For any patient whose surface exceeds 0.24 sq. m., 2 units of blood are kept in the wells.

3. For Transfusion During Heparinization Period but Off Bypass: One unit of heparinized blood is reserved for transfusion before and after bypass in all cases.

Totals and General Considerations.—In sum then, for a patient of 0.2 to 0.24 sq. m. surface area, a total of 6 units of heparinized blood is required. At the other extreme, a patient of 2 sq. m. or more requires 14 oxygenator screens for proper oxygenation, and thus 6 units of blood for the machine and cannulas, another 2 for transfusion from the machine, and 1 for off-bypass transfusion as mentioned, making a total requirement of 9 units of heparinized blood. With increasing experience, the needs for heparinized blood have constantly decreased, but this range of 6 to 9 units is considered to be the minimum at the moment.

However, additional blood must be on hand for supportive use after the heparinization period. Citrated blood is used for this purpose. For the tiny patient of 0.2 to 0.24 sq. m. surface area, 1 unit is reserved for this purpose; for the other extreme of 2 sq. m. of surface area, 4 units are kept on hand. The belief governing the use of citrated blood has undergone a change with time. Early in the course of experience with open-heart operations at the clinic, it was thought necessary to utilize freshly collected citrated blood. Gradually, however, slightly older blood was used without mishap—at first an occasional unit, then more and more, so that 5-day-old and then 10-day-old citrated blood was found to be satisfactory. Now ordinary bank blood has been found entirely acceptable for this purpose.

Crossmatching

Two or three days prior to the expected date of operation, 20 ml. of blood is withdrawn from the patient for crossmatching. An appropriate number of donors are given appointments to present themselves at the blood bank on the day preceding operation. We have considered it wise to schedule an extra donor for each case, because one might fail to appear. (After the need for heparinized blood has been met, blood from any additional donors is collected in A. C. D. solution.)

From each donor 5 ml. of blood is withdrawn for crossmatching with that of the patient, for a Venereal Disease Research Laboratory (VDRL) slide test, and for hemoglobin determination. Major and minor crossmatches are then carried out between blood of the patient and of each donor at three temperatures: 11, 25, and 37 C. Likewise, autoagglutinin tests are performed on all bloods at these temperatures. No crossmatching between donors has been done, and in more than 400 operations performed with utilization of the Gibbon-type pump-oxygenator no problems have arisen from interdonor incompatibility.

If, prior to operation, the blood of any donor is found incompatible, a substitution is made from a list compiled for this purpose and the donor is informed that he need not appear. This situation has arisen twice.

Blood Collection

The donors return for phlebotomy between 7:00 and 7:30 a. m. on the day of operation. This is carried out in the usual way: from each donor 470 ml. of blood is drawn through a 17-gauge disposable needle and disposable polyethylene tubing into a silicone-coated vacuum bottle containing 1,500 U. S. P. units of heparin in 30 ml. of saline solution.

The unit of blood, which may be citrated rather than heparinized, is collected in 120 ml. of A. C. D. solution (U. S. P. and N. I. H. formula B).

During the collection a special messenger is available to carry all the blood directly to the operating room wherein the operation is to be performed. This requires 10 to 15 minutes. On arrival there, the bottles of heparinized blood are placed in a water bath at 37 C to prevent cooling until they are ready to be used by the machine. Of course the blood should never be heated to a higher temperature. (Citrated blood never is placed in the water bath.) As soon as the machine has been completely assembled and the thoracotomy performed, the heparinized blood is emptied gently into the screen-filtered receptacle of the oxygenator machine.

Management of Blood Characteristics and Balance in Patient During Operation

Prevention of Osmotic Disorders.—The 30 ml. of saline solution included with each unit of heparinized blood filling the machine and otherwise in readiness—a total of 180 to 270 ml. of saline solution in the 6 to 9 units required—is a minimum irreducible at this time. A real danger would be present should this fluid leave the vascular system. For example, the resulting relatively small change in osmotic pressure may produce a fatal degree of pulmonary edema. In order to prevent this, concentrated (25%) salt-poor human serum albumin (generously supplied by the American Red Cross) is poured along with the blood into the machine's receptacle at the rate of 1 ml. of albumin to each 4 ml. of saline solution.

Recovery from Unused Tubing.—The machine utilizes teflon tubing of 0.5-in. caliber for all the major flow lines, and a tube of smaller bore is used in the coronary sinus suction system. Since, therefore, the cannulas themselves hold a considerable quantity of blood, the contents of any excess tubing removed in the process of attaching the machine's vessels to those of the patient are carefully emptied into the machine's reservoir.

Injection of Heparin.—Theoretically, prior to institution of bypass the patient should be given intravenously enough heparin to match that used by the machine—that is, 1,500 U. S. P. units (approximately 15 mg.) per 500 cc. of blood volume. In actual practice the dosage is 3 mg. per kilogram of body weight. Half of this is given intravenously three minutes before the arterial cannulas are inserted and the other half when the two vena caval cannulas are inserted.

Maintenance of Balance.—Throughout the operation there is continual calculation of blood loss and replacement; in fact, a blood balance sheet is kept for this accounting. The blood lost to suction and that removed for tests are measured directly. All gauze and toweling are weighed, dry and wet, and their blood content calculated. The blood in the operative field is estimated. From these data is figured the net blood loss, which is tallied against net blood supplied; and thus the balance is determined. In order to waste as little as possible of the heparinized blood on hand, this balance is made up during the period of heparinization by transfusion from the machine. When feasible, the patient is weighed before and after operation as accurately as possible to check on blood loss. These weights are tabulated also. When the patient's blood balance has been evened at the end of perfusion, the cannulas are removed and 3 mg. of protamine per kilogram of body weight is injected intravenously.

Blood for examination of plasma hemoglobin is drawn from the machine after disconnection in order to ascertain whether trauma to blood has been excessive. Results of these determinations have always been less than 40 mg. per 100 ml., the lower limits of accurate determination by the method of testing. (The method used is simple, rapid, and direct, and although rough it has been found to yield consistent results: A mixture of 2 ml. of plasma and 8 ml. of isotonic sodium chloride solution is read directly in a photelometer, with use of distilled water as a control. The reading is then compared with a table based on chemical determinations. Readings of less than 40 mg. per 100 ml. have been found in normal individuals.) The operative wound is then closed and the patient is returned to a special postoperative recovery unit in the hospital. The heparinized blood remaining in the machine is discarded.

Tests Made.—During the early experience with open-heart surgery with use of extracorporeal circulation, many more laboratory tests were made than are carried out at present. These discontinued tests and the number of times they were originally performed during perfusion are as follows: plasma hemoglobin determination, seven; cell volume determination (hematocrit), six; bilirubin (both direct and indirect), three; sodium, potassium, chloride, and carbon dioxide, four; urea and creatinine, four; total proteins, with albumin and globulin differential, five; hemoglobin, red blood cell, white blood cell, and platelet counts, four. Clotting time was determined with great frequency. Obviously these tests were carried out at the beginning because so much of what was happening to various blood factors during perfusion was unknown. As experience has been gained, tests have been discontinued one by one, until now only the examination of plasma hemoglobin at the end of perfusion remains a routine procedure, as a check on hemolysis within the system.

Comment

We have attempted to eliminate every frill of testing and every type of unnecessary test so that we can concentrate on the essential tests in order to provide proper blood for the patient. Perhaps the key to the whole process is the fact that the procurement of blood for these and all other operations is the primary concern of experienced, trained clinical pathologists and is not left to technicians and nonprofessional personnel or those who procure blood as a sideline.

Although we do not wish to imply that all of the problems concerned with this intricate and involved procedure have been solved, we do feel that we have, for the moment at least, a practical solution to the problems presented to our blood bank. It is of interest to note in closing that in the experience with over 400 operations with the pump-oxygenator performed as of this writing, not a single donor has failed to keep his early-morning appointment at the blood bank.

RESISTANCE AND SENSITIVITY TO DIGITALIS

Louis C. Craig, M.D., Bernard Lown, M.D.
and
Samuel A. Levine, M.D., Boston

The average doses of digitalis required for the initial digitalization and subsequent maintenance of the heart patient are well known, but the averages do not indicate the range of individual differences encountered from one patient to another. Resistance to digitalis, and to the glycosides derived from it, is illustrated by the histories of four patients. It is sometimes impossible to give enough digitalis to slow down a tachycardia without inducing nausea, vomiting, pulsus bigeminus, or other signs of intoxication. Extreme sensitivity to digitalis is illustrated by the histories of three patients who exhibited intoxication with amounts of digitalis generally regarded as safe and usually given with impunity. Such sensitiveness has been seen after digitalis leaf, digoxin, digitoxin, and acetylstrophanthin. Awareness of the range of digitalis tolerance is essential if digitalis is to be used safely and effectively. Single-dose methods are hazardous. Digitalis should be given in divided doses, and the process of digitalization should be thought of as an individual biological titration.

The introduction of the purified glycosides has made available drugs that are standardized by weight and are of uniform potency. This standardization has popularized fixed dosage schedules both for digitalization and for maintenance therapy. Quantitative formulas have been proposed to predict digitalis requirements. These formulas are either based on the patient's weight or derived from statistical studies of the average requirements for large groups of cardiac patients. Even a single-dose technique for achieving digitalization has been advocated. Average dose formulas, as well as other dogmatic oversimplifications in prescriptions of digitalis drugs, disregard biological variability. Since individual requirements are unpredictable, single-dose methods of digitalization constitute a distinct hazard for the patient. At the present stage of our knowledge, clinical practice demands that digitalis be administered in divided doses. In effect, the process of digitalization constitutes a biological titration, during which the dose which will achieve the maximum therapeutic action is determined.[1]

The wide variability in digitalis dosage requirements is not generally appreciated. For example, in some patients a so-called digitalizing dose may prove inadequate for daily maintenance therapy,

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rhythm and bigeminy with multiform ventricular beats. A number of physicians believed that the various manifestations ascribable to digitalis were, in fact, due to advancing decompensation and underdigitalization. Therefore an acetylstrophanthidin tolerance test was carried out. At the time of the test she had had no digoxin for 10 days. The underlying rhythm was atrial flutter. Within five minutes after the first increment of 0.15 mg. of acetylstrophanthidin, bigeminal rhythm developed. This dose is but a small fraction of the amount usually necessary to initiate digitalization. Since the development of bigeminy may have been fortuitous, the test was repeated nine days later. At this time she had received no digitalis medication for 19 days. Again bigeminal rhythm recurred after 0.15 mg. of acetylstrophanthidin was administered.

When the digitalis dose was increased for one day severe intoxication occurred which lasted for four days, notwithstanding the administration of potassium and procainamide.[4] Thereafter, the sensitivity to digitalis was such that effective therapy could no longer be carried out. Even a single dose of 0.25 mg. of digoxin every two or three days was not tolerated. This sensitivity was not limited to orally administered digoxin but also was apparent and even more striking after intravenous administration of acetylstrophanthidin.

What was the basis for the marked sensitivity to digitalis? The most likely explanation is that the severe heart disease caused the digitalis intolerance. However, in this case increased sensitivity developed abruptly after the episode of digitalis intoxication. Prior to this, the patient had received 0.2 mg. of digitoxin in daily doses for a year without untoward effect. It is possible that an overdose of digitalis, in the presence of advanced heart disease, induced permanent biochemical damage to the myocardium. Digitalis in overdose causes loss of potassium from the heart muscle.[5] Such loss may not be restored when the myocardium is continuously subjected to anoxia, even when the agent initiating the depletion is withdrawn. A deficit of myocardial potassium would result in an augmented sensitivity to digitalis.[1]

An alternate explanation is that digitalis was present in the body during the final episode of illness, which lasted four months. Digitoxin is generally thought to persist in the body for three to four weeks. Unchanged drug has been found in the urine for as long as 50 days after digitoxin biosynthetically labeled with radiocarbon (C^{14}) has been given.[6] In dogs depleted of potassium the duration of toxicity resulting from acetylstrophanthidin, which usually remains in the body for less than 15 minutes, was prolonged for many hours. It may be that in severe cardiac decompensation failure of digitalis detoxification by the liver prolongs its period of action, and this in turn maintains myocardial potassium depletion. The clinical result would be an extreme degree of long-lasting digitalis intolerance.

Case 6.—A 60-year-old robust man with rheumatic aortic valvular insufficiency and cardiomegaly, but without heart failure, was given maintenance doses of digitalis to prevent recurrences of bouts of atrial tachycardia. He was never digitalized with a long-acting preparation but was given a maintenance dose of digitoxin, 0.2 mg. four times a week. After several months he experienced nausea and anorexia. The sinus rate was 55 per minute, and he exhibited occasional ventricular premature beats. The dose was reduced, therefore, to 0.1 mg. per day for four and then for three days a week. However, he began to complain of being "abstracted" several times each day. He found it difficult to elaborate on this symptom. His associates and family explained it as a momentary lapse of consciousness with transient periods of disorientation. This very sensation of "abstractness," as well as cardiac standstill, was reproduced by brief carotid sinus massage. After digitalis therapy was stopped, carotid sinus stimulation evoked neither symptoms nor cardiac standstill.

A patient may be ultimately digitalized by only a maintenance dose given daily, even though he has never received larger doses before. In the course of several weeks, enough of the drug accumulates in the body to produce its effect. Under these circumstances this daily dose is slightly larger than the maintenance requirements for that particular person. In fact, digitalis intoxication can result from such a procedure, as occurred in the patient described. The sensitivity in this patient was primarily due to increased vagal effect on the sinus node. It is well established that digitalis preparations may sensitize the carotid sinus predisposing to syncopal attacks. As little as 3 grains (0.2 Gm.) of digitalis leaf may be accompanied by increased carotid sinus sensitivity.[9] In this patient, substituting quinidine for digitalis prevented the bouts of rapid heart action and abolished the carotid sinus sensitivity. An alternate approach might have been the use of atropine in conjunction with digitalis. Since the sole reason for digitalis, however, was to prevent recurrence of paroxysmal atrial tachycardia, it seemed more advisable to switch to quinidine rather than manipulate two medications.

Case 7.—The patient was a 43-year-old woman with multivalvular heart disease—mainly aortic stenosis, atrial fibrillation, and cured subacute bacterial endocarditis. An aortic valvuloplasty resulted in objective improvement. Both before and after surgery frequent attacks of rapid heart action were not readily controlled by digitalis. Because of laboratory findings suggesting thyrotoxicosis, she was given two doses of radioactive iodine, totalling 18 mc. Ten weeks after receiving antithyroid medication, she was rehospitalized because of repetitive paroxysms of rapid ventricular rates ranging from 175 to 200 beats per minute. The rhythm continued to be atrial fibrillation. Small supplements of digoxin controlled the arrhythmia transiently but evoked either complete heart block or bigeminal rhythm. Digoxin in a dose of 0.25 mg. every second or third day proved excessive. The ventricular rate varied from 40 to 190 beats per minute. The protein-bound iodine level was found to be 1.2 mcg. per 100 cc. After thyroid replacement therapy she tolerated 0.15 mg. of digitoxin daily without manifesting arrhythmias. She still had heart rates up to 130 beats per minute but without periods of excessive bradycardia.

In this unusual case, atrial fibrillation with a rapid ventricular rate could not be controlled readily by digitalis without provoking digitalis intoxication. The basis for the paroxysms of rapid heart action remains unexplained. One might have expected that lowering thyroid function would have lessened or eliminated the paroxysms. However, this was not the case. In effect, marked sensitization to digitalis occurred, so that it could not be employed effectively without provoking intoxication. Once adequate thyroid replacement was instituted the arrhythmia could be managed more readily by digitalis therapy.

Comment

Determination of the optimal dose of a digitalis preparation for any given patient continues to be an important problem in the management of congestive heart failure. For a large group of patients a dosage response curve, as well as a dosage toxicity curve, can be formulated, indicating the amount of drug which is most likely to produce the maximum therapeutic and the least toxic effect. However, in any particular patient, at the present time, accurate prediction of this dose is not possible. Proper therapy demands awareness of the extremes of individual variability. The difference in patients who present cardiac problems may be very marked. This is particularly evident when cases 1 and 5 are compared. In the former, even after the patient was assumed to be fully digitalized, huge additional doses resulted in therapeutic but no toxic action. In the latter, single doses of 0.25 mg. of digoxin evoked toxic effects even when it could be assumed that the patient was not at all digitalized.

In the majority of patients no such extremes are encountered. It is therefore possible to digitalize most patients with safety by means of small, properly spaced, fractional doses. Nevertheless, the problem is found in the occasional patients in whom routine digitalization would endanger the ultrasensitive individual while it would not give therapeutic benefit to the individual with exceptional resistance.

What are some of the factors producing the extremes in responsiveness? The key factor is the state of the myocardium. In the absence of heart disease large doses may be taken without ill-effect. This is well illustrated in the reports of attempted suicide with digitalis drugs. Bickel[10] reported a suicidal attempt by a 36-year-old woman without heart disease who consumed a dose of 50 mg. of digitoxin (Digitaline Nativelle). The drug was in liquid form and was diluted with warm water. Nausea, vomiting, somnolence, resistant hiccups, visual manifestations, and severe hypotension followed. The electrocardiogram revealed changing atrial pacemaker, paroxysms of atrial flutter and fibrillation, and first degree heart block, the latter persisting for 11 days. No alterations in the ventricular complex were observed. The patient made an uneventful recovery. The sparing of the ventricle after massive doses of digitalis in the absence of heart disease has been also noted by others.[11] When the heart is normal, ventricular abnormalities due to digitalis are unusual, and if they occur they are of brief duration. In the presence of heart disease, ventricular ectopic rhythms are common and readily provoked by digitalis. With increasing severity of heart disease, the margin between the therapeutic and toxic doses progressively decreases. At times no beneficial action can be obtained without toxic effects. In the terminal stages of decompensation, toxicity may precede therapeutic action and it may be impossible to use digitalis profitably.

Next in importance in determining the myocardial threshold for digitalis is the state of body electrolyte distribution. Electrolyte and water abnormalities accompany heart failure. These are due to both derangement in heart function and the therapeutic procedures in current use. While calcium plays a significant role in modifying the action of digitalis, in clinical practice the key ion is potassium. Depletion of potassium, no matter how produced, sensitizes the heart; under such circumstances even small doses of digitalis may result in advanced intoxication.[1] Depletion of potassium in animals with normal hearts lowers digitalis requirements to the same degree as does cardiac decompensation in animals without potassium deficits.[7] It may be that the reduced threshold to digitalis observed with advanced heart failure is in some measure due to deficits of myocardial potassium.

Sensitivity to digitalis may also be encountered in patients with acute myocardial infarction, acute cor pulmonale, and rheumatic carditis, during calcium administration and adrenal steroid therapy, in the presence of acute renal shutdown, in the terminal stages of uremia, after large infusions of glucose, and in the very aged. Whether the common denominator for digitalis sensitivity in this heterogenous group is an electrolyte disturbance within the myocardium is uncertain at present.

A number of factors or states tend to increase digitalis requirement, though this does not always go hand in hand with increased resistance to the toxic effects. Following are some of the situations: in the presence of thyrotoxicosis, febrile illness, myocarditis, impaired gastrointestinal absorption, or more rapid and complete hepatic inactivation; occasionally after valvular heart surgery; and in infants under the age of 2 years.[2] Other conditions in which resistance is thought to occur at times include pneumonia (especially lobar), pneumothorax, after pulmonary embolic episodes, in atrial fibrillation developing in patients with Wolff-Parkinson-White syndrome, in beriberi heart disease, in the presence of a ball-valve thrombus in the left atrium, and in arrhythmias resulting from metastasis to the myocardium.

Awareness of the role of the above enumerated factors permits treading with caution when sensitivity is suspected. This helps in avoiding serious intoxication. When resistance is anticipated, it permits the use of digitalis with boldness to assure full therapeutic action. This, at times, may prove lifesaving.

Summary

There is great variability in the amount of digitalis necessary for optimum effect in different individuals. In a considerable group of patients unusual resistance or marked sensitivity may occur.

The two most important factors which determine the responsiveness to digitalis are the state of the heart muscle and the electrolyte balance in the body. With increasing severity of cardiac decompensation, especially when this is the result of heart muscle insufficiency, smaller doses of digitalis will produce intoxication. When body potassium is depleted, enhanced sensitivity to digitalis results. The operation of these two factors may be the common underlying basis for sensitivity as well as resistance to digitalis under all circumstances.

Awareness of these principles is of clinical significance. At times it will prevent severe digitalis intoxication and even fatality. At other times it will enable one to attain cardiac compensation and recovery when the condition might otherwise be regarded as refractory to therapy.

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MULTIPLE ANTIGEN IMMUNIZATION.—Two groups of infants received poliomyelitis immunizations beginning at the age of 6 weeks and completing the series by the age of 10 months. One group was given the vaccine as a separate injection while the other received the vaccine mixed in the same syringe with pertussis or diphtheria-pertussis-tetanus vaccine. The responses of these infants to poliomyelitis vaccine were analyzed and the following general conclusions were reached: Poliomyelitis vaccine administered to infants as young as 6 weeks, and given according to the usually recommended schedule, results in a satisfactory antibody response. The response to poliomyelitis vaccine mixed with pertussis and DPT vaccines and given as one injection is satisfactory. The combination of antigens gave no practical interference to development of antibodies to diphtheria and pertussis. There were no apparent hazards or adverse reactions associated with combined poliomyelitis-pertussis or poliomyelitis-DPT vaccines. There were no differences in poliomyelitis antibody responses following immunizations with separate and combined vaccine injection. The existence of maternal antibodies at the time of poliomyelitis immunization had no apparent influence on the production or persistence of active antibodies. These findings indicate that poliomyelitis immunization procedures can very easily be integrated into routine pediatric immunization programs, thereby affording the earliest possible protection.—R. Batson, M.D., A. Christie, M.D., B. Mazur, M.D., and J. H. Barrick, B.A., Response of the Young Infant to Poliomyelitis Vaccine Given Separately and Combined with Other Antigens, *Pediatrics,* January, 1958.

EVALUATION OF TES-TAPE AS A QUANTITATIVE INDICATOR

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Paper strips impregnated with an enzyme, glucose oxidase, can be used to test for the presence, and also to estimate the concentration, of glucose in urine. The accuracy of such estimates was investigated by testing 104 samples made by adding predetermined amounts of glucose to normal urine to give concentrations of 10, 5, 3, 2, 1, 0.5, 0.25, and 0.1%. The test discriminated correctly among these possibilities except in six cases, four 0.25% samples being misread as 0.5% and two 0.1% samples being misread as 0.25%. The effects of varying the pH, of letting the urine stand at different temperatures, of contaminating it with bacteria, and of exposing the test strips to water, air, and sunlight were studied, as were the responses of the strips to solutions of other sugars (maltose, fructose, and galactose). The test was found to be specific for glucose. The enzyme must be protected against the destructive action of heat, air, and light. Used with due care, especially with respect to timing, the test discriminates reliably among the above-mentioned concentrations of glucose in urine and is a practical method for observing the course of clinical glycosurias.

There has been some disagreement reported as to the reliability of Tes-Tape (strips impregnated with the enzyme, glucose oxidase) in the quantitative determination of urinary sugar. Results reported by Comer[1] indicate that Tes-Tape had an over-all accuracy of 96% in the testing of 1,500 urine samples with glucose concentrations of 0 to 2%. Leonards,[2] on the other hand, found Tes-Tape satisfactory as a quantitative indicator only for testing urine containing 0.25% glucose or less. Urine specimens that contained 0.5% glucose or more were often found to give readings that were deceptively low. Since a rapid, easily performed, quantitative examination for urinary sugar is of obvious value to the patient, the physician, and the laboratory, a study was undertaken to re-evaluate the reliability of Tes-Tape in quantitative determination. Special emphasis was placed on factors, affecting both the paper strips and the urine, that might lead to erroneous results.

All tests, with the exception of one series of unknowns, were performed by one laboratory worker and were performed exactly in accordance with the furnished instructions. Normal urine specimens that had been collected from hospital patients and found to be free of sugar or other abnormal constituents were used for all studies in which glucose concentrations were prepared. Urine samples collected from diabetic patients were used in one series of tests. Bacterial cultures used were isolated from hospitalized patients having urinary tract infections.

Tests and Results

Urine and distilled water solutions containing mannose, inulin, lactose, xylose, sucrose, fructose, galactose, and maltose were tested with Tes-Tape and gave no positive results in concentrations lower than 5%. Galactose gave a reading of 0.1% at the 5% concentration, and maltose gave a reading of 0.1% at the 10% concentration. Fructose produced a slight color change at 5% and at 10% concentrations. Since high concentrations of these sugars are not likely to be found even in abnormal urine, the Tes-Tape strips can be considered specific for glucose determination. The results of this comparison of the readings obtained using the sugars mentioned are shown in table 1. It should be noted that "2% or more" is the highest concentration which may be determined by use of Tes-Tape. In all results reported, 2% should be interpreted as meaning 2% or more.

To evaluate Tes-Tape in quantitative determination, 104 urine samples containing varying concentrations of glucose were tested. Glucose concentrations of 10, 5, 3, 2, 1, 0.5, 0.25, and 0.1% were used. The two laboratory workers performing the study had previously familiarized themselves with the technique of the test, but the concentration of glucose in each urine sample was unknown to them. Of the 104 specimens examined, 6 were read in-

Table 1.—*Comparison of Results Obtained with Tes-Tape Used for Detection of Various Sugars in Urine*[*]

	Concentration, %								
	10	5	3	2	1	0.5	0.25	0.1	0.01
Glucose	2[†]	2	2	2	2	0.5	0.25	0.1	0
Maltose	0.1	T[‡]	T	0	0	0	0	0	0
Fructose	T	T	0	0	0	0	0	0	0
Galactose	0.25	0.1	T	T	0	0	0	0	0

[*] Mannose, inulin, lactose, sucrose, and xylose gave negative results in all concentrations.

[†] Values of 2 indicate 2% or more—highest reading possible with Tes-Tape color chart.

[‡] T: less than 0.1% but a definite color change.

From the Laboratories of the Hospital of the University of Mississippi.

correctly. Four of these contained 0.25% glucose and were read as 0.5%. Two urine samples containing 0.1% glucose were read as 0.25%. Nine of the specimens examined had a glucose level of 1%, and of these four were recorded as containing 0.5% glucose and five were recorded as containing 2% glucose. Since the color chart provided with the Tes-Tape strips does not include a color standard for 1% glucose, these latter nine results cannot be considered incorrect but are inconsistent. Contrary to the results obtained by Leonards, in no concentration for which a color standard was provided was a reading made that was lower than the true glucose level in the urine tested.

Variation in pH was considered as a possible source of error in the use of enzyme glucose oxidase strips. Normal urine with glucose added to give concentrations of 10, 5, 3, 2, 1, 0.5, 0.25, and 0.1% were used and the pH adjusted to pH 2 to pH 12 for each glucose concentration. Results of tests with use of Tes-Tape proved the method to be accurate in the range of pH 4 to pH 9. At pH levels below 4 and above 9 urine samples containing glucose concentrations of 0.1% gave readings of 0.25%. It was found that, at each extreme of the pH range used, the color change appeared only in a narrow zone at the solvent line. As reported by Comer, ascorbic acid in concentrations above 0.05% was found to retard color formation at the 0.1% glucose level.

TABLE 2.—*Effects of Bacterial Contamination on Results with Tes-Tape in Urine Specimens Incubated at 37 C*

	Glucose Concentration, %																							
	10			5			3			2			1			0.5			0.25			0.1		
Incubation time, hr.	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72
Normal urine and																								
Ps. aeruginosa	2*	2	2	2	2	2	2	2	0.5	2	0.5	0.25	0.5	0.25	0	0.25	0.1	0	0.1	0	0	0	0	0
P. vulgaris	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.25	0.25	0	0	0	0	0	0	0	0	0	0	0
Esch. coli	2	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.25	0.1	0.25	0	0	0	0	0	0	0	0
Staph. aureus	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0	0	0.25	0	0	0.1	0	0	0	0	0
Beta-hemolytic streptococci	2	2	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.25	0	0	0.1	0	0	0	0	0

* Values of 2 indicate 2% or more—highest reading possible with Tes-Tape color chart.

TABLE 3.—*Effects of Bacterial Contamination on Results with Tes-Tape in Urine Specimens Incubated at 4 C*

	Glucose Concentration, %																							
	10			5			3			2			1			0.5			0.25			0.1		
Incubation time, hr.	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72	24	48	72
Normal urine and																								
Ps. aerugonisa	2*	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.25	0.25	0.25	0.1	0.25	0.1	0	0	0	0
P. vulgaris	2	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.5	0.25	0.1	0.1	0	0	0	0	0	0
Esch. coli	2	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.5	0.25	0.1	0	0.1	0	0	0	0	0
Staph. aureus	2	2	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.5	0.5	0.1	0.25	0.1	0.1	0.1	0	0
Beta-hemolytic streptococci	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0.5	0.5	0.5	0.25	0.25	0.25	0.1	0.1	0.1

* Values of 2 indicate 2% or more—highest reading possible with Tes-Tape color chart.

We examined the effects of standing, using urine specimens from diabetics. These specimens contained no bacterial contamination and gave a 4+ reading by Benedict's method and a Tes-Tape reading of 2% or more. The specimens were divided and held for 48 hours at 37 C and at room temperature and were tested at irregular intervals during this time. Standing at either temperature appeared to have no effect on the results of Tes-Tape determination.

We considered the effect of growth in urine—due to urinary tract infections or to outside contamination of urine samples held for any length of time—as a source of error in the use of the enzyme strips. Normal urine specimens with glucose added to give concentrations of 10, 5, 3, 2, 1, 0.5, 0.25, and 0.1% were seeded with 18-hour broth cultures of Pseudomonas aeruginosa, Proteus vulgaris, Escherichia coli, Staphylococcus pyogenes var. aureus, and hemolytic streptococci. Duplicate tests were made at 37 C and 4 C, and readings were recorded at the end of 24, 48, and 72 hours. It was found that the urine specimens seeded with all organisms tested and incubated at 37 C gave negative readings at the 0.1% glucose level in 24 hours. The strain of P. vulgaris used utilized the largest amount of glucose, as indicated by a reading of 0.5% at the glucose level of 2% after 24 hours at 37 C. The results of the tests made on urine held at 4 C showed that even at this temperature P. vulgaris, Ps. aeruginosa, Esch. coli, and Staph. aureus were capable of metabolizing enough glucose to give a negative reading in 48 hours at the 0.1% glucose level. The presence of hemolytic streptococci did not appear to alter the readings at the end of 72 hours. Results of this study are shown in tables 2 and 3.

The ability of the test paper to withstand various types of abuse was next taken into consideration. Tes-Tape strips moistened with tap water and exposed to circulating air at room temperature for 24 hours were found to produce a color change but were inaccurate for determining varying concentration of glucose solutions. Strips moistened with tap water and dried for three minutes at 100 C were completely inactivated. Exposure to ultraviolet light for 1, 3, and 10 minutes or to direct sunlight for one hour did not affect the accuracy of readings at various glucose levels. Exposure to direct sunlight for periods longer than one hour produces a gradual decrease in the sensitivity of the strips. Table 4 shows the results obtained from this series of studies.

Comment

Although solutions of fructose, galactose, and maltose produce some color change in high concentrations when tested with Tes-Tape, the strips may be considered specific for glucose at the sugar levels found even in abnormal urines. The pH range in urine does not affect the accuracy of the readings made with Tes-Tape strips. This indicates a wide pH stability of the enzyme. Results of quantitative determinations made with use of Tes-Tape indicate the accuracy of the test to be 94% or higher, and the incorrect results were in each case higher than the true glucose level in the urine tested. It was found to be essential that the darkest zone of color be used in making a reading and that examination of the strips be made as nearly as possible at exactly one minute. Accuracy in recording results was found to depend to a great extent on careful timing. It was also found that experience in performing the test increased the accuracy of the results obtained. Standing did not appear to affect the results obtained unless the urine was contaminated. In cases of urinary tract infections it was found to be essential that the urine not be allowed to stand at room temperature longer than was necessary before testing for urinary sugar. Urine specimens containing bacterial contamination were not satisfactory for examination if held for as long as 24 hours at refrigerator temperature. Bacteria which are most often found in urinary tract infections utilize the glucose in urine to the extent that negative or deceptively low results may be obtained by any method used for glucose determination. The Tes-Tape strips were found to be stable under conditions normally encountered in the laboratory if protected from excessive heat, wetting, and extended exposure to direct sunlight. Since Tes-Tape quantitative sugar determination requires no preliminary preparation and takes only slightly over one minute to perform, it has a decided advantage over more time-consuming methods when heavily contaminated urine specimens are examined.

TABLE 4.—*Results of Exposure to Environmental Factors Affecting Stability of Tes-Tape Strips*

	Glucose Concentration, %							
	10	5	3	2	1	0.5	0.25	0.1
Tape wet with tap water and air-dried	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.25
Tape wet with tap water and dried at 100 C for 3 min.	0	0	0	0	0	0	0	0
Exposure to ultraviolet light								
1 min.	2*	2	2	2	2	0.5	0.25	0.1
3 min.	2	2	2	2	2	0.5	0.25	0.1
10 min.	2	2	2	2	2	0.5	0.25	0.1
Exposure to direct sunlight								
1 min.	2	2	2	2	2	0.5	0.25	0.1
5 min.	2	2	2	2	2	0.5	0.25	0.1
30 min.	2	2	2	2	2	0.5	0.25	0.1
1 hr.	2	2	2	2	2	0.5	0.25	0.1
2 hr.	2	2	2	2	0.5	0.5	0.25	T
4 hr.	2	2	2	2	0.5	0.5	0.1	0
6 hr.	T†	T	T	0	0	0	0	0

* Values of 2 indicate 2% or more—highest reading possible with Tes-Tape color chart.
†T: less than 0.1% but a definite color change.

Summary

The use of Tes-Tape (paper strips impregnated with the enzyme, glucose oxidase) seems to be a satisfactory and practical method for the quantitative determination of urinary sugar. It is specific for glucose. Tes-Tape is stable in the range of pH 4 to pH 9. Bacterial contamination reduces the validity of the results obtained. The enzyme-impregnated strips can be inactivated by heat and by extended exposure to direct sunlight.

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CORTISONE AND POLYARTERITIS NODOSA.—All instances of rheumatoid arthritis examined at necropsy at the Mayo Clinic through 1954 were reviewed, with special emphasis on the incidence and character of the vascular lesions and their relationship to the administration of cortisone. There were 52 patients in the study. Fourteen of these had received cortisone and 38 had not. Four (29%) of the group of 14 treated with cortisone had generalized lesions of polyarteritis nodosa, whereas none of the 38 patients who did not receive cortisone had such lesions. These findings suggest that, in certain susceptible patients with rheumatoid arthritis, the administration of cortisone may precipitate the development of diffuse necrotizing arteritis. The explanation as to why this may occur in some patients with rheumatoid arthritis treated with cortisone and apparently not in patients with other diseases (with the possible exception of disseminated lupus erythematosus) is not clear. . . . We found no vascular lesions specific for rheumatoid arthritis in this study.—J. W. Kemper, M.D., A. H. Baggenstoss, M.D., and C. H. Slocumb, M.D., The Relationship of Therapy with Cortisone to the Incidence of Vascular Lesions in Rheumatoid Arthritis, *Annals of Internal Medicine*, May, 1957.

CERTIFIED CAUSE OF DEATH—ANALYSIS AND RECOMMENDATIONS

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Discrepancies in the interpretation of findings reported as causes of death have often had serious consequences. The following material must be considered: history (past and present), the last illness, agonal phenomena, and autopsy (including all gross and laboratory data). Cases are cited showing that the omission of any one source of information can lead to a completely false conclusion. The mechanisms causing death are often multiple, complex, and difficult to analyze; pathogenesis may not parallel significance. An appropriate single listing of causation may thus be impossible. Terminal undemonstrable physiological factors can be important and quite independent of demonstrable dramatic positive findings. Provision for correction of certificates should be made on the basis of additional data. Consultation with an expert in certification or with a responsible authority before completion of the certificate is recommended. This routine would often clarify jurisdiction at the outset, would give diagnoses in keeping with acceptable nomenclature, and would enhance the accuracy of vital statistics. It would reduce the danger of injustice and spare the physician the embarrassment and irritation that follows an erroneous report.

The opinion of a physician as to the cause of death is written on a death certificate without mention of the background of facts substantiating the opinion. Sometimes haste and expediency influence his decision. Because of the wide range of error that obtains in determining the cause of death and in obtaining the written record of the facts under present certification procedure, a careful routine and all possible safeguards are desirable.

Medicolegal Classificaion

To attain a better scientific approach in determining the actual cause of death, the medicolegal classification of deaths is here listed, modified from that of Moritz.[1] Natural deaths include (1) instantaneous death, (2) sudden death (unexpected syncope with fatal unconsciousness or rapidly fatal illness with early prostration, without initial unconsciousness), and (3) expected death (prolonged illness, prolonged coma, or expected death with sudden termination). Unnatural deaths include (1) accident, (2) suicide, and (3) homicide (murder, with and without premeditation, or manslaughter in various degrees, both justifiable and technical).

For correct classification of a death, the actual facts as to its underlying cause must be established. Some cases in which miscarriage of justice may occur are cited here.

Case 1.—An indictment was drawn maintaining that a father "wilfully and maliciously drowned his child by holding the mouth under the faucet until she was dead." The autopsy protocol listed morphologic findings which did not justify the diagnosis of drowning. The chloride test for drowning was negative. A massive subdural hemorrhage confirmed the father's contention that the child had fallen accidentally. An assistant medical examiner stubbornly maintained, despite evidence to the contrary from his own protocol, that the cause of death was due to drowning alone, with no contributory cause. This discrepancy in interpretation is, in fact, due to a lack of a clear understanding of the meaning and intent of the phrase "cause of death." This phrase is not uniformly or clearly defined.

Case 2.—A young officer was charged with murder, because he was seen in the company of a housemaid shortly before she was found with a scalp wound, fracture of the skull, and intracranial hemorrhage. The testimony of several pathologists was required to free this man from the charge of striking a fatal blow, because the microscopic examination showed that the deceased person had been suffering from active and extensive syphilitic arteritis of the cerebral vessels with rupture and hemorrhage.

Case 3.—A husband was suspected of killing his wife in an altercation overheard by neighbors. It was found that the cause of her death was due to an active syphilitic disease of the blood vessels with actual gumma, accounting for the massive subarachnoid hemorrhage.

Case 4.—A middle-aged man fell from a horse and was picked up dead. The basis for double indemnity seemed obvious, but the autopsy showed that a coronary occlusion was responsible for the fall and death.

Case 5.—A middle-aged man fell from a horse, but got up and continued his duties. Several months later, he went into coma and died rapidly. A tentative clinical opinion of apoplexy was offered, but the autopsy showed chronic subdural hemorrhage, undoubtedly related to the original trauma.

The consequences of discrepancies in the interpretation of findings can be serious in criminal and civil cases. Careful determination of the cause of death requires consideration of the following material: 1. History, including data obtained from family physician or medical advisor. 2. Clinical picture of the present illness, including symptoms, and laboratory data relative to the bacteriological, chemical, toxicological, and biopsy findings. 3. Clinical picture of agony, important in determining the terminal physiological mechanisms of death. In

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New York City, visiting the scene is required of the medical examiner in cases of sudden death. Evaluation of the surroundings and confirmed statements from onlookers, friends, or relatives constitute important circumstantial evidence. 4. Autopsy. This is most important in establishing actual cause of death. It should include careful, complete gross dissection and microscopic studies and chemical, bacteriological, and viral data if warranted by findings and circumstances.

Generally, the clinical opinion is entered on the death certificate and is based on only the first three sources listed. Each case requires individual consideration, with evaluation of all data compiled from every available source. In one instance, a medical examiner certified coronary arteriosclerosis as the cause of death after a partial autopsy. Often, this is an acceptable cause of death. However, in this instance the deceased person had a history of trauma to the head, with an interval suggesting subdural hematoma. He went into coma and died after a period of time during which he showed neurological symptoms. Had this history been available to the medical examiner, it would have been clear that the head must be explored before a cause of death from this source could be excluded. Testimony subsequently demonstrated that the autopsy had been inadequate and that the stated cause of death was unjustified.

Relation of Demonstrable and Undemonstrable and Natural and Unnatural Factors in Mechanism of Death

In numerous cases, the cause of death is difficult to determine even when careful history, clinical observation, laboratory data, and autopsy results are available. Of course, the percentage of error increases when some or all of these data are unobtainable. As revealed by autopsy procedure, the range of error is 10% in the hands of able clinicians possessing laboratory aids. This parallels the experience of others.[2] The percentage of error when data from several of these sources, including data from autopsy, are not available is such as to diminish the validity of mortality statistics based on such material. A recent "Select Bibliography of Studies Relating to Accuracy of Cause of Death Statistics"[3] covers both precision of diagnosis and dependability of reporting procedure.

Assumption that autopsy will invariably establish the exact nature of the cause of death is unwarranted. In a considerable number of cases, the cause cannot be established by autopsy alone; also, there remains a group of deaths in which autopsy and all other data do not prove adequate to determine the actual cause of death. This pertains particularly to sudden deaths of a functional nature[4] and to some instances of poisoning or obscure intoxication. The gross autopsy is also often inadequate in cases involving vascular and viral diseases, which often do not show extensive morphologic alteration. These examples may illustrate.

Case 6.—A man bent over, compressed a hyperirritable carotid sinus in his neck, and fell dead. There is no method for confirming carotid sinus reflex or disproving it as a cause of syncope and death.

Case 7.—A case of hypersensitivity, as death after the administration of a few drops of a dilute sodium thiopental (Pentothal) solution or of cocaine, will not yield a demonstrable mechanism of death at autopsy.

Case 8.—When a patient dies as the anesthetic mask is being applied, before any anesthesia or other operative procedure is initiated, no cause of death may be found, even after thorough investigation by any present methods.

Morphologic Lesion.—In most deaths where gross autopsy findings in the form of acceptable morphologic lesions are at hand, the immediate cause of death is functional or physiological. In many cases there may be no certain association between the morphologic lesion accepted as the cause and the actual final mechanism of death.

This may occur in coronary cases, except in the instance of ruptured myocardial infarct with tamponade. While morphologic lesions of the coronary vessels may often indicate coronary insufficiency, as long as such changes were present for a considerable time before death the visible morphologic explanation does not really account for the death. Often there is no mention in the history of a sudden exertion that would permit acceptance of a sudden relative insufficiency. Very extensive disease of the coronary vessels may not occasion symptoms prior to death. At many autopsies, patients are found with extensive coronary disease; yet this finding is incidental to an independent extraneous mechanism as the cause of death. The presence of a gross infarct precludes the initial coronary occlusion giving rise to it as the only or direct cause of sudden death. This is true for such occlusion by thrombus, embolus, hemorrhage into atheroma, the dissecting elevation of a value-like intimal flap, or occlusive discharge into the lumen of grumous atheromatous material, if infarct changes of some duration are present. A fresh extension of the thrombus is not a common terminal mechanism. Occasional observation of gross myocardial infarct without coronary occlusion also suggests that physiological mechanisms can be very significant. Healed extensive myocardial infarcts so frequently found at autopsy also make inadequate the mere presence of gross infarction as an infallible cause of death. All other lethal mechanisms must be excluded to give such a lesion its full significance in evaluating the cause of death.

Physiological and Pathological Mechanisms.—Another common instance in which pathological findings do not explain the physiological mechanisms of death is in death after lobar pneumonia. Impairment of function of the involved lung does not usually account for the death; actually, it is the toxic effect on the heart and the viscera, on the general circulation and the peripheral vessels, and on the central nervous system and specialized centers that has greater weight. While attention at autopsy may be focused on the lung lesion, the more significant mechanism of death may be a subsequent complicating finding of meningitis or bacterial endocarditis. Many patients recover from the same extent and type of pneumonia when such complications do not ensue.

Physiological mechanisms often kill with no demonstrable positive findings, and morphologic lesions are significant only to the extent that they produce lethal physiological distortion. Only when all other mechanisms of death can be excluded are morphologic lesions per se, without demonstrable lethal physiological mechanisms, valid as the cause of death. It is essential that the autopsy be complete and that the pathology found be incompatible with life in order to be acceptable as a cause of death. The familiar examples cited show that the terminal undemonstrable physiological component in the mechanism of death can be separate and independent of the demonstrable dramatic positive findings.

Death may be defined as the cessation of integrated life functions. Life depends on integration of the following physiological functions: ingestion, digestion, absorption, respiration, distribution (circulation), integration (nervous system and endocrines), metabolism, excretion, and egestion (elimination). Death occurs if any of these functions is much impaired or arrested. A long period of symptoms usually precedes death when impairment occurs in the three first and three last listed functions.

Medicolegal cases are concerned with instantaneous, sudden, and unexpected deaths. Disturbances in respiration, circulation, and the central nervous system result in deaths by asphyxia, syncope, and coma. Involved in each is the failure of oxygen to reach the tissues.[5] Moritz [1] found that vascular accident was the most frequent cause of sudden death.

Degree of Certainty.—To overcome the confusion in evaluating causes of deaths, let us classify the main findings in the interests of exact degree of certainty as to the mechanisms involved.

First, a finding occurring during life may be incompatible with life. The finding may be morphologic (gross or histological), bacteriological, or chemical. This offers the only certain cause of death. For instance, a ruptured heart may be found at autopsy, with a massive accumulation of blood in the pericardium, or a heart may be found free in the thoracic cavity as a result of traumatic compression of the chest. There may be a lethal quantity of cyanide in the brain or a lethal quantity of carbon monoxide in the blood.

Second, a positive finding adequate to cause death may also be known to be compatible with life. After excluding other possible mechanisms of death, it is reasonable to infer that the positive finding was the cause; some physiological mechanism in addition to the morphologic distortion is inferred and accepted. This constitutes the largest group. For instance, a compound fracture of the tibia and pelvis may be caused by an automobile accident, and the patient may die with symptoms of shock. Further, the ordinary case of marked coronary sclerosis may be seen, with a few areas of hemorrhage deep in the papillary muscle suggesting insufficiency. In this category also is extensive lobar pneumonia.

Third, there may be no findings known to cause death. In this group, the cause often remains undemonstrable, so that in immediate and sudden deaths circumstantial data may be of considerable importance. Physiological mechanisms may apply here exclusively. In my experience, the cause of instantaneous death is often not found at gross autopsy. Deaths caused by acidosis, alkalosis, disturbed potassium metabolism, vagal reflexes, and sudden cardiac decompensation leave no morphologic expression.[3] In this group are the hypoglycemic reaction after overdosage of insulin and the death that follows "pleural shock" as the result of the introduction of a needle for a pneumothorax.

This grouping would help an attorney or jurist to evaluate probability of error and to decide the validity of the stated cause of death, particularly in the second and third categories, where a basis for the opinion of the cause of death should be established.

When multiple natural causes or both natural and unnatural causes, such as trauma, are involved, classification becomes more complex. The timing of the separate entities is often important. Natural causes arise from within the body, unnatural usually from an external source. The following examples illustrate this: 1. Trauma alone causing death: A body is mangled by a railroad train. 2. Natural disease alone causing death: A ruptured dissecting aneurysm occurs with cardiac tamponade. 3. Trauma as a minor contributory cause of death: A patient admitted to hospital with fractured elbow dies there of uremia secondary to hypertrophied prostate and ascending infection. 4. Natural disease as a minor contributory cause of death: A ruptured liver with luetic aortitis and ostial stenosis causes death. 5. Natural disease and trauma both significantly involved in the cause of death: A man develops a coronary thrombus and falls from a scaffold, with lesions of considerable extent in both categories. A hypertensive patient with history of a previous stroke falls down stairs and shows a fractured skull with an intracerebral hemorrhage. A ruptured spleen follows minimum trauma in a patient with chronic myelogenous leukemia.

Careful analysis of the unnatural causal component interrelations is required in medicolegal cases, for justice is best served if the sequence and interrelationship of all facts is established. 1. Trauma directly causing natural disease: A man is injured at work and develops local infection and then generalized sepsis. This would include, too, a man who is struck on the leg and, after an interval, develops an osteogenic sarcoma. 2. Trauma indirectly causing natural disease: An aged male fractures his femur as a result of trauma and develops bronchopneumonia. Included here also is the case of extensive multiple injuries which lead to shock, a fall in blood pressure, and a secondary coronary thrombosis. 3. Trauma aggravating preexisting natural disease: A patient with slowly growing tumor of long duration shows widespread dissemination after trauma. An instance of melanoma or teratoma of testis is an example. 4. Natural disease causing trauma: A patient develops fleeting attacks of blindness because of brain tumor and is injured in an automobile accident during an attack. 5. Trauma and natural disease unrelated (the natural disease may be preexisting or coincidental): A breast tumor may be struck and the increased growth is found to be due to fat necrosis. Included also is a patient who dies of profound anemia with hemorrhage from ulcer of the stomach, and lead poisoning contributes to mechanism of anemia.

In the relationship of natural and unnatural, such as trauma and tumor, the time factor is most significant.[6] What has been said for trauma applies also to other conditions of unnatural cause, such as poisoning, asphyxia, and drowning. The analytical approach can be used to establish the part played by the unnatural component to determine the medicolegal significance in criminal and civil actions.

Problem of Definition

"Cause of death" allows for various definitions and interpretations. Does the request for cause of death call only for the actual terminal mechanism, with basic disease considered contributory? Different death certificates in use in the United States request "immediate or determining cause of death," "immediate proximal cause of death," "primary cause of death," and "disease causing death." Clear definitions are needed of "main disease," "basic disease," "contributory cause of death," and "complicating cause of death" (table 1).

The United States Census Bureau, to avoid ambiguity, requests the "immediate" cause of death and the "underlying" cause of death. The first is defined as the last of a series of disease entities which contribute to death. The latter is defined as the disease entity which initiates the series of disease entities resulting in death.

In certifying a death, the physician's answers are now limited to terminology acceptable to public health officials. His failure to adhere to specific diagnostic terms as listed in the Manual of International Statistical Classification of Diseases, Injuries, and Causes of Death (Sixth Revision, World Health Organization, Geneva, Switzerland, 1948) or the Joint Cause Manual and any attempt on the part of the physician to qualify his diagnosis can cause difficulties and delays for the family, the undertaker, and himself.

The prevailing concept of single underlying cause introduces trying and at times insurmountable difficulties and requires arbitrary decisions by the certifying physician or the coding process. In chronic illness, often multiple, related, and, at times, unrelated heterogenous causes prevail. The expansion of the "disease-complex" or "associated cause" classification would be more applicable. Yet, mere expansion of the present Vital Statistics Instruction Manual cannot substitute for the individual judgment of the certifying physician personally acquainted with the specific facts and complex ramifications of the case.

Recommendations

By the present procedure for obtaining medical information on the death certificate, all objectives are merged in the listing of the cause of death. In my opinion, a separate statement assuring that no crime was committed and that death was due to natural causes should be required. Then a separate parallel listing should be made of the sequence of the medical events preceding death and another separate listing of the part each pathological or clinical entity played in shortening the life of the patient. Such listings are often not similar. If not identical, sequence and significance cannot then be listed in a single order simultaneously. For the first listing of sequence, replies in proper order should be required to the question, "Which was the initiating disease entity, and what was the relationship in the order of their development of the subsequent complications or the simultaneous existing entities?" To determine the significance of each entity in causing the death, so important for statistical purposes, the second separate listing should call for an answer in the order of weight to the question, "What are the disease entities or complications in order of magnitude, i. e., without which death would have been delayed the longest or life prolonged the most?"

A true meaning can thus be given to "cause of death" by the separation of the objectives in certification. It is essential to make the concept of pathogenesis and sequence distinct from the concept of significance and actual contribution to the mechanism of death. The physician is helped by thus delimiting the definition of the phrase "cause of death," and he can offer the exact information required and avoid confusion and error. The form of the certificate on "page 2" of table 1 promotes this endeavor. Table 2 is an illustrative example of the proposed medical report.

The average physician who is not a pathologist certifies relatively few deaths in his lifetime; he can hardly be expected to become expert in the field of certification. Capable physicians are often profoundly ignorant of the issues and nuances involved —bear witness the frequent instances of obvious medicolegal cases certified by a physician in good faith on a natural death form when clearly the cases should have been referred immediately to the coroner or medical examiner. In modern society, with a telephone always at hand, a discussion or consultation should be held with an expert in certification prior to completion of the certificate. This routine would clarify jurisdiction at the outset and thus obtain agreement on satisfactory terminology in keeping with acceptable nomenclature and the preferred form of listing of the diagnoses with a uniformity which does not now prevail. The "removal and embalming permit number" for the undertaker could be obtained at this time by the physician and entered on the certificate to expedite the removal of remains.

It would then be unnecessary to divulge the cause of death to the mortician when the confidential certificate is used. The sealed confidential certificate for the cause of death could then be used with greater assurance of success. On this score, it should be noted that during the very first year of use of the sealed confidential certificate in Manhattan (where no one but the physician and the certification clerk ever saw the certified cause of death), there was a 10% drop in recording of arteriosclerotic heart disease and a corresponding increase in recording of alcoholism, syphilis, cancer, and insanity on death certificates.

TABLE 1.—*Certificate of Death by Natural Causes and Proposed Medical Report*

Page 1

Name.. Social Security No. .... Certificate No. ....

Personal Data

Residence ....
....
Social status ....
Date of birth ....
Age ....
Wife or husband ....
Occupation ....
Burial place ....
Citizenship ....
Veteran of war of ....
Father's name ....
Father's birthplace ....
Mother's birthplace ....
Informant's relationship ....
Signature of funeral director ....
Burial permit number ....
Place of *burial* ....
(Completed by mortician)

Administrative Data

Place of Death ....
....
Length of stay at place of death ....
Date and hour of death ....
Sex ....
Color or race ....
Approximate age ....

I hereby certify that (I attended the *deceased*)
(A staff physician attended the deceased)
from .... to ...., and that the *death* .... (*was*) ....
(date) (date)
.... (was not) .... *caused directly or indirectly by accident, homicide, suicide,* acute or chronic poisoning, by abortion, or suddenly *while in apparent health*, without care or *attendance by a physician*, or in any suspicious or unusual manner.

....
Signature

Unless this statement can be signed, the case should be referred to the medical examiner *or coroner.*
I further certify that the death .... (was) .... (was not) .... *due to communicable* disease listed in the Sanitary Code *which required that the casket must be permanently* sealed before removal from the place of death.

....
Signature

(Completed by physician)

....
Address

Removal permit no. ....

....
Telephone number

Page 2

Name.. Place of Death.. Date of Death..................

Factual Data

Outstanding and pertinent facts of present illness (derived from symptoms, other facts of history, physical signs, laboratory data, or other means which serve to aid in arriving at a diagnosis).
Autopsy findings.
Degree of Certainty*
The cause of death is based on (check headings or delete *captions* which do not apply).
Past history...... Direct clinical observation......
Present clinical findings only......
Hospital study......
Was there consensus of opinion......
Operation with or without *biopsy and histological* study......
Laboratory tests, as isolation of specific etiological agent (bacterial or viral)...... recognized serological procedure...... biochemical studies...... toxicology...... other tests............................
Autopsy without..... or with..... *confirmatory* histological studies.
Evaluate statistical significance of this case by writing whether this diagnosis has been established with sufficient certainty to warrant *inclusion in analytical* studies. Yes...... No......
Should this case be investigated from standpoint of contacts? Yes...... No.....

Cause of Death (Pathogenesis)

List and group diagnosis of present illness in sequence of occurrence (from standpoint of initiating entities and complications).

List other independent pathological conditions contributing to mechanism of death.

Cause of Death (Significant)

List diagnoses in order of *significance* and contribution to the cessation of life, i. e., in *the order of severity, or* lesions *without which life might have been prolonged the longest.*

(Substitute a running and analytic narrative only if preferred)

....
Signature

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* May or may not appear on final blank.

The sealed form had to be abandoned in New York City, because without prior consultation many certificates had to be rejected when finally presented for filing by the undertaker for burial permission just prior to the funeral. The sealed cause of death often showed trauma in the listing and other diagnoses with legal implications which varied from homicide to poisoning. The resulting last-minute delays in scheduled funerals made it essential to vary the procedure and to divulge the cause of death to the undertaker on an open form. He, in turn, then calls the certification clerk for his removal and embalming number, checking the propriety of the certification. This is archaic, for if there is any question about the diagnosis, the undertaker is hardly in a position to resolve it. In this way at least, if the diagnosis is found erroneous, the case can be referred to the legal authorities with less delay and before the body is embalmed. By prior consultation, the physician would be spared the embarrassment and irritation that follows such an error when the certificate is necessarily rejected by the certification clerk and the body is belatedly referred to the displeased medical examiner or coroner. At best, a new certificate may be required of the physician, with all that this implies in loss of time and temper.

The physician is often unaware of the implication of his opinion expressed on the "open" certificate when it is subsequently used as a legal instrument. As long as the certificate is admitted in evidence, provision should be made for evaluation of its accuracy. Some recommendations on this score have been made elsewhere.[7] The basis for his opinion should be made available. Difficult and controversial problems in certification could be reviewed by a board of pathologists or an impartial panel similar to what has been used in negligence litigation in New York County so successfully for the evaluation of medical facts and opinions.[8]

Above all, the accuracy of vital statistics would be enhanced. To achieve these objectives, the changes in certification procedure outlined above are suggested and the incorporation of improvements in the death certificate proper recommended.

TABLE 2.—*Illustrative Medical Report*

Name.. .. Place of Death.. Date of Death..................

Factual Data	Cause of Death (Pathogenesis)	Cause of Death (Significant)
Outstanding and pertinent facts of present illness	Grouped listing of diagnoses of present illness	Diagnoses listed in order of significance in contributing to death.
A 65-year-old male develops urinary obstruction which requires relief by suprapubic cystotomy, and two weeks later a suprapubic prostatectomy is done. Five days after this operation, the patient suddenly gasps, becomes cyanotic, and dies within the hour with a diagnosis of pulmonary embolism. Autopsy showed no pulmonary embolus but a definite coronary thrombus.	Coronary thrombosis, left anterior descending Prostatic hypertrophy with urinary retention Cystotomy Suprapubic prostatectomy Pyelonephritis, recent	Coronary thrombosis Acute pyelonephritis
Degree of certainty*	Incidental and independent pathological conditions	
Diagnoses made on what basis? Autopsy with histological studies (check)	General arteriosclerosis Nephrosclerosis Old healed apical tuberculosis	.... Signature

* May or may not appear on final blank.

Summary

Certain limitations in administrative procedure in certification exist along with inadequacies in the present method of determining the cause of death. The interplay of forces in the cause of death often defies analysis or makes it most difficult. Therefore, consultation prior to completion of the certificate with an expert in certification or responsible authority is recommended, as is a revision of administrative procedure by separating the sequential from the significant to avoid ambiguity in gathering and recording data of the individual clinical and pathological entities.

The application of a physiological classification of causes of death and the documentation of the source of the facts and the basis for the diagnosis, to determine the "degree of certainty," is also advisable. An evaluation of accuracy would follow. A board of pathologists or an impartial panel of experts to examine death certificates in difficult or controversial cases would increase accuracy.

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PRINCIPLES FOR PRECAUTIONARY LABELING OF HAZARDOUS CHEMICALS

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A substantial number of packaged chemicals are not now required by law to identify hazardous ingredients on their labels or to warn users of the dangers of overuse or misuse. The need for precautionary labeling of chemical products was first formally registered by the American Medical Association in 1884 with the adoption of a resolution urging that Congress and the several state legislatures be called on to enact legislation to require lye to be sold as a poison and under a poison label. A broad and encompassing act requiring precautionary labeling of hazardous substances in commercial, household, and industrial chemicals has now been drafted by the American Medical Association's Committee on Toxicology. The bill is intended as a model for uniform laws to require the declaration of hazardous ingredients and warning statements on the label and in the accompanying literature of chemical products.

The accelerating pace of modern technology is most evident in the multitude of chemical products which are used in industry, on the farm, and about the home and its premises. A quarter of a million or more trade-name substances are available, and their number and variety increase with each successive year. For example, an estimated 70,000 preparations are or have been marketed as cosmetics, a comparatively small class of chemical products. It has been further calculated that as high as 1,000-2,000 new cosmetic products appear each month, many of which disappear shortly thereafter.[1]

A substantial number of packaged chemicals are not now required by law to identify hazardous ingredients on their labels or to warn users of the dangers of overuse or misuse. A recent survey revealed the sketchy, nonuniform, and generally inadequate pattern of regulations at the state and national levels for informative labeling of chemical products.[2] The survey disclosed that, at the national level, label laws exist for drugs, pesticides, certain caustic and corrosive substances, and narcotics. There are no federal laws for the precautionary labeling of industrial chemicals, household chemicals, or poisons, although regulations for the packaging and labeling of dangerous chemicals and explosives in transit by land or water or via the mails are issued by the Interstate Commerce Commission and the Post Office Department.

State legislation is a patchwork of laws patterned after *(a)* existing federal legislation, *(b)* earlier but now superseded federal statutes, and *(c)* special laws which are often overlapping and sometimes even contradictory. Various types of special laws for chemicals are in force in the states, some of which have as many as five such statutes. On the other hand, other states have inadequate or no regulations.

The Need for Precautionary Labeling

The need for precautionary labeling of chemical products was first formally registered by the American Medical Association in 1884 with the adoption of a resolution urging that Congress and the several state legislatures be called on to enact legislation to require lye to be sold as a poison and under a poison label. Later resolutions were adopted in 1910 and 1918 urging precautionary labeling of caustic poisons. Through the untiring efforts of Drs. Chevalier Jackson, Charles W. Richardson, and William C. Woodward, a Federal Caustic Poison Act was enacted in 1927.[3] State laws uniform with or generally parallel to the federal law have since been enacted in 25 states.

Despite these early expressions of organized sentiment for the labeling of articles with poisonous ingredients, many chemical products have remained essentially free of federal or state labeling regulations. The first state to move into this vacuum was California, which formulated a code for hazardous chemicals used in industry in 1944. Several states have since adopted similar standards. The first state and municipality to modify and extend these standards to embrace household chemicals were New York state and the city of New York, which simultaneously developed amendments to their sanitary codes in 1954. Since then a smattering of states (Connecticut, Indiana, Kansas, Massachusetts, North Carolina, and Texas) have adopted widely varying regulations intended to require informative labeling of poisonous materials.

The compelling need for fully informative labeling of chemicals has been reflected in correspondence received by the American Medical Association after it made known its interest in this problem. The following excerpts from recent correspondence indicate the types of complaints which are prevalent and the general concern for appropriate legislation.

Secretary, Committee on Toxicology, American Medical Association.

A university professor writes:

> My 3-year-old child ingested the dye in question accidentally. It had been kept in a relatively safe place but due to the fact that it was not labeled "poison" or dangerous, no unusual precautions had been taken.
>
> The child in question is one of five in the household, ranging from 6 months to 7 years, and this is the first instance of such an accident. This, I think, speaks for itself as to the amount of precaution taken in the household.
>
> It may interest you to know that I contacted the company that manufactures the drug in search of information and can truthfully say that their cooperation was far from pleasant or effective.
>
> I wish to thank you for the information which you provided me and hope, among other activities of the A. M. A. that a recommendation for legislation for simple measures to obviate such accidents in households will be considered.

A dermatologist writes:

> I want to bring to your attention a very important matter as it affects the practicing dermatologist. I recently saw a garage worker, who does body repair work primarily, for a severe dermatitis affecting the hands and forearms, face, neck, and upper torso. He was unable to perform any work. As he improved, a series of patch tests were performed. Contact tests were done with all materials suspected of having solvent in them. A contact test was performed with . . . . and a drop of this on his skin produced a flare of erythema. Twenty-four hours later there was a papulovesicular rash at the site which exactly reproduced the clinical dermatitis.
>
> Since this man earns his livelihood in the body repair business, he was most anxious to know the nature of the substance in the remover that was causing his trouble. Naturally, he had a horror of a recurrence. I wrote to the manufacturer of the metal cleaner, and enclosed is a copy of the reply. In fact this type of reply is so common that I do not write unless the patient requests it. For the most part, where one writes inquiring for the composition of cosmetics that have produced a dermatitis, and many other different kinds of products, as a rule we get a brush-off. Yet, I think for the individual mentioned above, it is vitally important for his own future health that he know the nature of this chemical. It might be the hydrocarbons in there, and, in turn, it could be something else. If he knew and his family doctor knew, future trouble might be prevented.
>
> I certainly wish your Committee success, and hope it will bring about a uniform labeling law.

In response to the dermatologist's request, the firm replied as follows:

> With reference to your letter of January 21, 1957, the product you cite is one that is being used by literally thousands of concerns, with no ill-effects such as you mention.
>
> However, our medical advisor states that when exposure to a product containing hydrocarbons does result in a condition such as described in your letter, the best means for relief is the discontinuance of such exposure, and that the authenticity of this opinion is confirmed by its precept being widely followed.
>
> Therefore, any need for furnishing formula, samples, or information, other than that our product is a combination of ingredients of which some are hydrocarbons commonly and widely used for the purpose indicated by the name of the product is, in our opinion, dissipated by the above.

The foregoing reports are not representative of the attitude of the major chemical industry trade associations who have or are developing programs of precautionary labeling for their membership. Nevertheless, continuing complaints of this nature which are reported suggest that they are representative of the attitude of the less conscientious purveyors of these products. The experiences described in the above letters refute oft-repeated objections to precautionary labeling; namely, that trade secrets would be violated, that warning statements are a handicap, or that precautionary labeling is useless since small children cannot read labels. The fear that trade secrets are lost through label declaration of hazardous ingredients is ill-founded, and happily fewer firms now have this attitude. Experience has also demonstrated that warnings against misuse do not frighten away customers, rather they engender confidence that the product can be safely used if directions are followed. The claim that such labels are useless because the most frequent victims of poisoning are small children who cannot read the warnings is a spurious argument. Child poisoning occurs because harmful substances are easily accessible, less because of overt carelessness on the part of the parents than of their failure to realize that many familiar products are capable of harm. Label warnings are intended to counteract this easy familiarity which breeds carelessness in the handling and storage of chemical products.

Improvement is also needed in the labeling of those household and commercial chemical products which now carry some type of precautionary labeling. This was recently demonstrated at an industrial safety congress where a random sample of household and commercial chemical products were purchased for display.[4] Examination of a widely sold dry cleaner revealed that it was labeled in large letters "SAFE TO USE" "cannot be burned or ignited unless it is heated to beyond 110°F" and "No Dangerous Fumes." However, tests on the product disclosed that it possessed substantial inhalation and flammability hazards. About 15 other products were similarly examined, and all of them were found to be wanting with regard to adequate or accurate label warnings.

Development of a General Labeling Law

Legislation to require precautionary labeling of all hazardous chemical products has been under consideration by the American Medical Association for a number of years. In 1926, a proposal for a general federal law to safeguard the distribution of all poisonous substances in interstate and foreign commerce was proposed. This proposal was apparently set aside to assure passage of a labeling statute for caustic and corrosive substances. More recently, in 1951, a resolution of the House of Delegates called for a general study of the problem. The Reference Committee on Hygiene and Public Health strongly endorsed this resolution and stated that the "Board of Trustees plans to take appropriate steps to warn the public and parents of young children of the dangerous nature of household products known to be poisonous but not so labeled. . . ."

The Committee on Pesticides was called upon to implement this resolution. During the next two years it compiled information and explored possibilities for increasing public understanding of the uses and limitations of household chemicals. For educational purposes, the Committee prepared a medical exhibit on accidental poisoning and a pamphlet depicting typical poisoning cases and sponsored a radio transcription "Defense Against Poisons" for use by local medical societies. These activities culminated in an exploratory meeting in January, 1954, a general conference in September, 1954, on the health problems of household chemicals which led to the formation of the Committee on Toxicology in January, 1955. In October, 1956, as a result of prior conferences with industry, the Board of Trustees authorized this Committee to draft a model law for the labeling of dangerous household and industrial chemicals.

In considering the provisions of a model law for labeling of all types of hazardous substances, the Committee has adopted a set of principles which are fair and reasonable and reflect current knowledge of the toxicity of chemicals and the conditions under which they are employed.

The principles are as follows:

Coverage.—Precautionary labeling should be applicable to all chemical products containing hazardous substances which are not now so specifically regulated. These include packaged chemicals intended for home, commercial, or industrial use but excluding substances already informatively labeled and subject to existing statutes such as foods and drugs (Federal Food, Drug, and Cosmetic Act of 1938), economic poisons (Federal Insecticide, Fungicide, and Rodenticide Act of 1947), the caustic and corrosive substances in the concentrations specified under the Federal Caustic Poisons Act of 1927, and state laws in basic agreement with these statutes. In effect, the Committee's recommendations are intended to supplement rather than supplant existing legislation wherever applicable and practical.

The same labeling standards should apply to chemicals for export to foreign countries as to those for domestic consumption. This would obviate the recurring complaint that less than standard products are sold to foreign purchasers. Many countries, especially those without specific legal requirements, allow merchandise to be accepted within their borders on the basis that it complies with American law. Consumers of exported chemicals are entitled to the same protection that domestic users receive. Therefore, exemptions in labeling laws which allow a double standard for chemicals in domestic and foreign commerce should be scrupulously avoided.

Toxicity Standards.—The lack of adequate standards is a common failure of proposed legislation. While exact standards cannot be established when accepted and applicable testing methods are lacking, regulations should be constructed to allow those reading the law to determine the extent to which it may apply to their products.

The temptation to base toxicity standards on undefined human experience should be avoided when no measurement of this is provided. However, the toxic hazard of a substance or mixture of substances can be based on animal tests, since they provide a consistent and usually reliable index of the poisonous properties of a chemical. For the purposes of legislation, a toxic (poisonous) substance is tentatively defined as any material which kills half or more of a group of laboratory animals (rats) within two weeks in a single oral dose of 5 Gm. per kilogram of body weight or less, or on skin contact for a period up to 24 hours in a concentration of 1 Gm. per kilogram or less, or on inhalation for one hour or less in a concentration up to 200 mcg. per liter of gas, vapor, mist, or dust.

In the determination of acute toxicity, mortality data should not be computed on observation periods of less than one week and preferably over a two-week period, because of the possibility of serious errors occurring in the interpretation of the true inherent toxicity of compounds. Even within such a closely related series of compounds as the sulfanilamide drugs, significant differences in survival times after lethal doses are exhibited. This is due to differences in solubility, the least soluble possessing the greatest latent toxicity. Latent toxicity may not manifest itself within the usual 48-hour observation period, therefore a much greater time interval is needed for its detection.

The term "poison" could be abandoned in view of the wide variation in legal and scientific definitions of the term which now exist. Most, if not all, of the legal definitions are based on criteria which many now consider to be outdated. Existing statutes either specify values varying from 5 grains (0.3 Gm.) to 5 Gm. as the lethal quantity for (adult) human life or they resort to indefinite terms such as "noxious" or "virulent poison." Those statutes that confine the term to highly toxic compounds (LD_{50}—50 mg. per kilogram or less) fail to include such common causes of fatal accidental poisoning as carbon tetrachloride and kerosene. Nevertheless these are dangerous chemicals, especially to the very young who may die from as little as a mouthful (15 cc.) of kerosene. Finally, the possibility of proposed or pending litigation over the issue of the poisonous character of certain types of drug products may jeopardize the status of some legal definitions of this term.

In 1916, the United States Public Health Service, in a review of laws and regulations relating to poisons and habit-forming drugs, found that a lack of uniformity in various state laws and a lack of a standard definition of poison were the two most serious defects at that time.[5] State narcotic laws uniform with the federal Harrison Narcotic Act have since been enacted in the various states. Regrettably little improvement has become evident in the definition of poison over the last 40 years. Therefore, in lieu of a generally accepted definition of poison, substances capable of causing death to any age group are dangerous chemicals and should be so designated on the label.

Strongly sensitizing chemicals, which have heretofore not been considered in general labeling legislation, should be required to be identified and carry warning statements on their labels. The frequency and severity of the sensitization reaction determines whether a sensitizing material offers a significant potentiality for harm. An extensive dermatitis or other type of moderately severe disability occurring at a frequency of 1:10,000 would fall within the meaning of this definition.

Legal precedent for the labeling of strong sensitizing chemicals may be found in the special labeling requirements for paraphenylenediamine, an ingredient of certain hair dye preparations. While the majority of legal decisions suggest that the manufacturer of a product has no legal responsibility in either warranty or tort to the allergic plaintiff, legislation to recognize the allergic or unusually susceptible as a legally identifiable class is long overdue.

A survey of 71 allergists and dermatologists constituting approximately 1% of the membership of the American College of Allergists and the American Academy of Dermatology and Syphilology disclosed almost unanimous support for including and defining this group of chemicals as a separate category of hazardous substances to which precautionary labeling should be applied.

Labeling.—The labeling of hazardous substances should be based on the anticipated degree of danger. Under various suggested labeling schemes several types of hazards (such as toxicity and flammability) are recognized. These are identified by a short statement of the hazard and by appropriate signal words such as "poison," "danger," "warning," and "caution" to signify progressively lessening degrees of hazard. In practice, however, few persons are sufficiently interested or informed to analyze the precise shades of meaning given to the signal words and thereby act accordingly.

Many users of hazardous substances are not likely to draw a practical distinction between "danger" and "poison" and even fewer are likely to appreciate the difference between "warning" and "caution" on the label. However, the use of familiar symbols such as a flame for inflammable substances or a skull for a poisonous substance are readily recognized and meaningful even to the illiterate. The use of carefully chosen symbols in conjunction with the signal word "danger" for substances presenting the greatest hazard would facilitate recognition and bridge the language barrier.

Labeling for this group of products should include not only the label itself but other printed and graphic matter accompanying the product. This permits some control of advertising, especially as it relates to claims for safety. The re-use of food, drug, or cosmetic containers still bearing original labels or identifiable as such by characteristic shape, impression, or closure as containers for hazardous substances should be prohibited.

Conclusions

Precautionary labeling of hazardous chemicals should not be considered as an easy panacea to the difficult problem of poisoning prevention. This problem is far too complex to be solved by such a simple procedure. Nevertheless warning labels and the declaration of hazardous ingredients form the keystone on which to base social remedies for increasing public awareness of hazards and encouraging careful handling and storage of the many possibly harmful chemical products now available.

To meet this need, a broad and encompassing act requiring precautionary labeling of hazardous substances in commercial, household, and industrial chemicals has been drafted by the American Medical Association's Committee on Toxicology. The bill is intended as a model for uniform laws to require the declaration of hazardous ingredients and warning statements on the label and in the accompanying literature of chemical products. Widespread interest has been manifested in this measure, as evidenced by the many requests for copies of the bill and the opinions given on the means for initiating legislation. At the present time, such interest has been registered by state and federal legislatures, state and national medical societies and allied health groups, state and local health departments, and the Council on State Governments. Distribution of the bill is presently being made. Notices of intention to hold conferences for discussion and emendation of various legislative proposals are being circulated to interested parties in government, medicine, and industry.

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CLINICAL NOTES

THROMBOPHLEBITIS OF SUPERFICIAL ABDOMINAL VEINS

AN UNUSUAL COMPLICATION OF INFERIOR VENA CAVA LIGATION

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and
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Thrombophlebitis of the superficial abdominal veins is not serious nor a potenially dangerous complication of inferior vena cava ligation; however, we have been unable to find a similar case report in a review of the recent English literature. We believe that this case may be related to the superficial thrombophlebitis of the breast and chest wall[1] often reported as Mondor's disease, although, in this patient, a lower abdominal superficial thrombophlebitis was present. Furthermore, there is no mention of prior inferior vena cava ligation in the reported cases related to so-called Mondor's disease.

The usual complications of inferior vena cava ligation are of such protean nature as to be of no particular interest with regard to the individual case report. It is worthy of note that some[2] report a significant lack of postoperative complications, whereas others[3] indicate many difficulties. The procedure in their opinion should be done only as a lifesaving measure.

This obese patient had a ligation of his inferior vena cava after multiple pulmonary infarcts from an undetermined site of origin. He had leg edema postoperatively and was treated with bed rest for two weeks and elevation of his lower extremities, which were wrapped with elastic bandages. Anticoagulants were not given. About eight months postoperatively he developed phlebothrombosis of a single vein in the left lower quadrant of his abdomen extending up to the costal margin anterolaterally. This was followed in about two weeks by an acute inflammatory change (thrombophlebitis) in the same vein and its adjacent tributaries. Shortly after hospitalization it became evident that he was wearing his belt and pajama string tightly bound around the costal margin at the exact site at which the thrombophlebitic process began. This in association with his obesity predisposed toward venous stasis in compensatorily dilated veins.

Report of a Case

A 58-year-old male carpenter was injured on Sept. 27, 1954, at which time a power saw lacerated his right thigh just above the patella. This injury was adequately handled with minor surgical repair, and no particular difficulty arose until two weeks later when, while still ambulant, he suddenly began to have pain in the left side of his chest. This pain was very severe, was pleuritic in character, and required narcotics for relief. The electrocardiogram was within normal limits. After a few days, he felt well and remained that way until about two weeks later (four weeks after his injury to the thigh), when he noted a second onset of this pleuritic type pain in the right side of his chest. Several days later, he began having hemoptysis.

Physical findings observed after his second onset of pleuritic pain included diminished breath sounds with rales over the right lower posterior part of the chest. No murmurs were heard and the heart was not enlarged. The liver and spleen were not palpable, and there were no peripheral signs nor any indication of thrombophlebitis or phlebothrombosis. X-ray of the chest showed some "pneumonitis" at the base of the right lung with obliteration of the left costophrenic angle. Electrocardiograms at this time revealed abnormalities strongly suggestive of a diagnosis of instrinsic heart disease, but it was felt that they could also be associated with pulmonary infarction. The source of possible thromboembolism was not clear, but it was felt that any part of the venous system or of the chambers of the right side of the heart was of course, a potential area of origin. Subsequent chest x-ray revealed the left costophrenic angle to have cleared up, but he had developed a definite increase in his heart size and the right diaphragm was noted to have increased in height, with an area of clouding noted to be present in the right costophrenic angle.

The patient suffered two further attacks of chest pain which necessitated ligation of the inferior vena cava on Nov. 2, 1954 (performed by Dr. Alfred B. Longacre), about five weeks after the minor trauma to the right thigh. The electrocardiograms then showed regressive changes of the previously noted abnormalities, and it was thought that the site of origin for the thromboembolism was the venous system peripherally rather than in the heart itself.

The patient was treated with bed rest, elastic bandages, and brief periods of ambulation after about two weeks and he was not given anticoagulants postoperatively. He did fairly well over a period of months, with the exception of development of extreme edema of his two lower extremities. He had no specific trouble at any time with his right lower extremity. Postoperatively he maintained edema of both lower extremities—greater on the right (side of the minor laceration).

In early July, 1955, he noted a slow development of a cord-like structure in the left lower quadrant of his abdomen, which he likened to a "pencil mark" extending from the region of the costal margin downward to Poupart's ligament. This progressed in size to a total of 9 in. in length and assumed grayish-green or brownish discoloration. There was a

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From the Department of Surgery, Louisiana State University School of Medicine, and Touro Infirmary.

palpable cord about 0.25 in. in diameter, with the discoloration about 0.5 in. in breadth. Under observation, this cord-like structure changed, becoming involved in an inflammatory reaction in association with three of its tributaries in the same general vicinity. This then was associated with swelling, redness, and increased local heat. In addition, he had a low-grade temperature elevation for a short while. Heart and lungs were normal and blood pressure was 140/90 mm. Hg. The electrocardiogram and chest x-ray were normal. The general physical examination revealed no abnormalities other than the presence of moderate pitting pretibial edema bilaterally (slightly more on the right side), unrelated left prepatellar bursitis (which was later interpreted as possibly being due to a gouty diathesis), and prostatic fluid loaded with pus cells. The patient gave a history of having been treated previously for chronic prostatitis. The sedimentation rate was elevated. Special blood studies by a hematologist revealed no evidence of blood dyscrasia. There was no evidence of any deeper abdominal symptomatology nor disease, and, therefore, the possibility of pancreatic pathology as a possible diagnosis was discarded.

The patient was treated with absolute bed rest, anticoagulant therapy, multivitamins, prostatic massage, sulfisoxazole (Gantrisin) tablets, and general supportive measures while in the hospital for a total of 23 days. During this time, he wore elastic stockings up to the knees, including the toes and heels. He was placed on a weight-reduction diet at this time, with his original weight being 206 lb. (93.4 kg.).

The acute thrombophlebitic process subsided rapidly and he was discharged to his home on therapy with anticoagulants and vitamins in gradually diminishing doses. Prostatic massage and sulfisoxazole therapy were stopped while he was still in the hospital. He was given a few doses of crystalline trypsin (Parenzyme) (as recommended by Bowers[4]) intramuscularly for its possible effect on decreasing the thrombophlebitic process. Within several weeks after his discharge from the hospital, and with the utilization of the elastic stockings, the patient lost most of the edema of his legs and was seen on multiple visits in the office with either no edema or minimal edema of both pretibial regions. Consistently, he had manifested a trifle more swelling in his right lower extremity when edema was present.

Within the first month out of the hospital, the patient was vigorously engaging in activity around his home, with no ill-effects. With intentional weight reduction, his weight progressed down to 171 lb. (77.6 kg.) by January, 1956, a loss of 35 lb. (15.9 kg.) in seven months. Clinical examination of the heart, lungs, and blood pressure revealed no abnormalities, and the patient continued to feel better with his weight reduction. His activity increased to where he could be up most of the day with only minimal edema of his lower extremities. He did, however, continue to complain of some "tired feelings" in his feet when he was up for a long time. He stated that he did much better with walking than with standing or sitting around. The cord-like thrombophlebitic veins in the left lower quadrant of the abdomen completely subsided within a period of a few months after his discharge from the hospital and have caused no further difficulty whatsoever, despite his insistence on wearing a belt. As of late 1956, this patient returned to his former occupation.

Comment

This case seemed worthy of reporting because of the unusual nature of the postoperative superficial thrombophlebitic process, which was thought to be a direct result of the ligation of the inferior vena cava. We felt that the constriction of his belt and other garments at the level of the costal margin produced a stasis of blood in compensatorily dilated abdominal veins. This subsided nicely on the usually accepted therapy of bed rest, anticoagulants, and general supportive measures. It was thought at first possibly to be a result of the prostatitis, which he had, but this idea was discarded when a red streak was seen around his entire trunk from the pressure of his pajama cord at the height of the costal margin (the exact level at which the thrombophlebitic process began). Aside from this unusual manifestation as described, we would like to call attention to the patient's clinical course after his loss of weight and utilization of elastic stocking support. He cooperated extremely well with regard to intermittent periods of rest and elevation at first; later these no longer were deemed necessary.

We consider this related to Mondor's disease, although those cases manifest themselves in the breast or chest wall with only some extension down to the costal margin or lower, whereas in this patient it began apparently in the superficial epigastric or superficial iliac circumflex veins or their direct tributaries. It then extended from the costal margin down to Poupart's ligament and did not manifest itself to any extent on the chest wall. However, no mention is made in the cases of Mondor's disease[1] of there being any relation to a previous ligation of the inferior vena cava.

With regard to inferior vena cava ligation, we agree with the general recommendation of the literature that it should be performed only as a lifesaving measure as was done in this case. It has been stated[2c] that 85 to 90% of all patients with thromboembolism could be treated successfully with anticoagulants and general supportive measures. With this we agree. The complications from ligation of the inferior vena cava may be severe and significant enough to condemn this procedure as a "routine" one or as mere prophylaxis against thromboembolism.

We are truly unable to state the origin of the thromboembolism and, therefore, do not know that either leg was "involved" although the right thigh did receive the minor laceration and continued to manifest slightly more edema than the left.

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◆

BRONCHIAL ABRASION MICROBIOPSY INSTRUMENT

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The purpose of this communication is to present a modification and improvement of an instrument previously presented,[1] to further its usefulness and adaptability in obtaining material for cytological interpretation from the trachea, main and segmental bronchi.

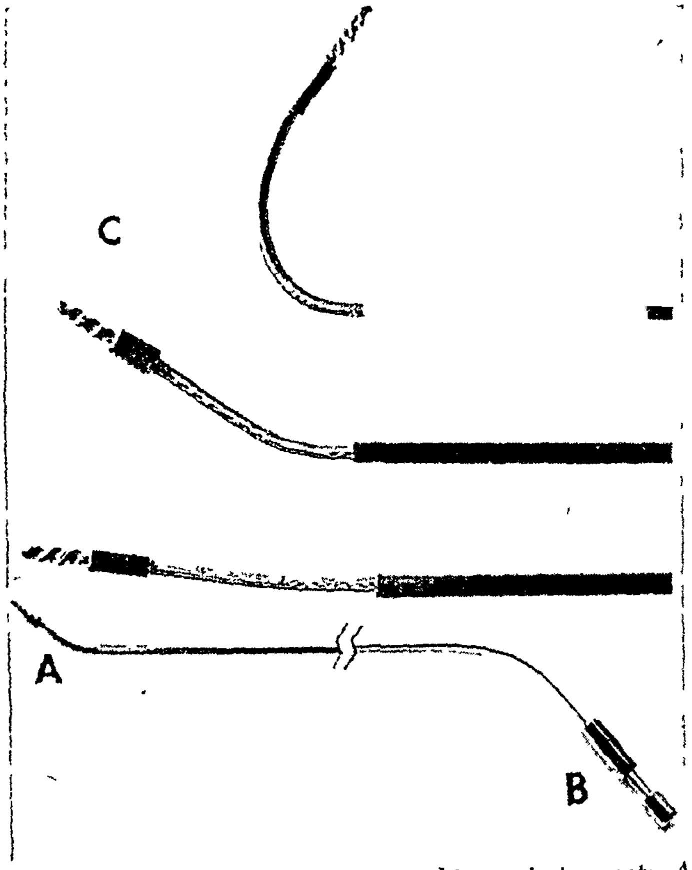

Fig. 1.—Bronchial abrasion microbiopsy instrument: *A*, flexible distal end with abrader (brush); *B*, actuating device; *C*, insert showing flexibility of distal end.

Description of Instrument

The body of the instrument, as seen in figure 1, is made of stainless steel and is 49.0 mm. long and 9.3 mm. in diameter. At the distal end is a screw chuck, attached to the body by a flexible sleeve. A disposable part, a twisted wire-handled nylon abrader (brush), when screwed into the chuck, can be moved from a straight line to an angle of approximately 110 degrees to the long axis of the body. The proximal end of the instrument, bent at an angle of 45 degrees, contains an actuating device which permits the abrader to be rotated about the body of the instrument in either direction, through an angle of approximately 300 degrees. The position of the abrader, with relation to the

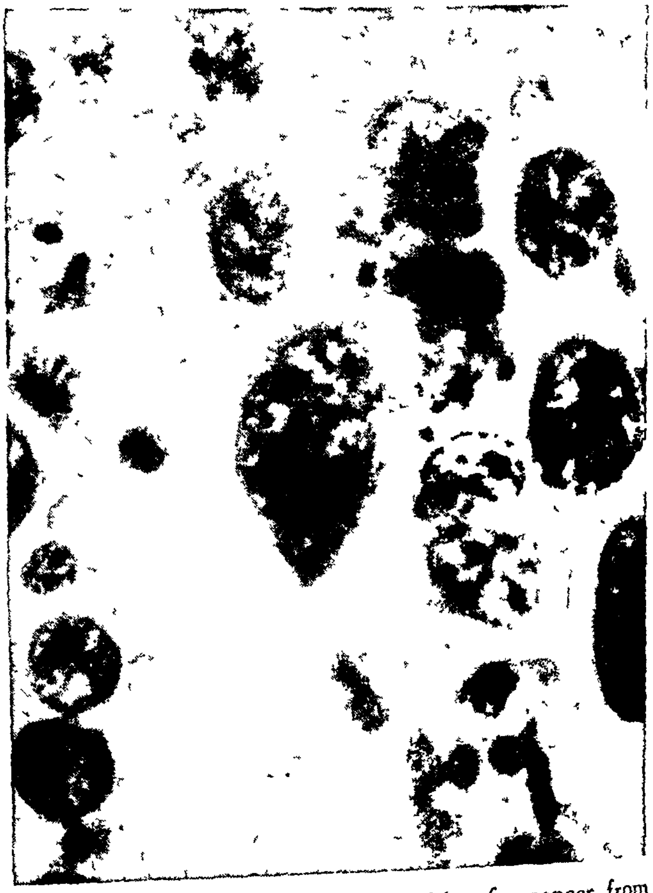

Fig. 2.—Microbiopsy specimen positive for cancer from upper lobe bronchus. Roentgenography and bronchial washings were negative. (× 190).

From the Cytology Institute for Cancer Detection and Research handle or body, should be determined by rotating the actuating device before the instrument is inserted into the bronchoscope.

Procedure

The bronchoscopic examination is done in the usual way. Abrasion microbiopsy testing is indicated in all cases where there is any possibility of the presence of bronchogenic carcinoma. A separate abrader should be used for each site to be tested, and at least one direct smear made of the abraded material obtained from the trachea, main and segmental bronchi. The specimens, fixed immediately in pure methyl alcohol or in the standard ether-alcohol solution, require no further processing before staining. The use of microscopic slides with frosted ends is recommended. These should be numbered prior to the examination and a paper clip attached or a small rubber band placed about each slide.

Comment

The bronchial abrasion microbiopsy instrument is presented as a new and effective additional aid to early diagnosis of bronchogenic carcinoma. The cellular material obtained with it is actually abraded from beneath the exfoliative level of the mucosa. The cells, being "alive" when detached, stain well (fig. 2). The material is invariably rich in amount and consists of not only single scattered cells but also clusters and groups of cells as well as cohesive particles of mucosa (microbiopsy specimens). This permits better differentiation of malignant changes.

In a case in which the test was repeated after a week's interval, the only cell changes noted were of a mild inflammatory nature.

Bronchogenic carcinoma is the most frequent cancer in men in the United States. The incidence is rising at an alarming degree. Despite the intense clinical studies and the improvement of operative techniques, the five-year survival rate remains deplorably low. It is believed by some authorities[2] that the present rising total incidence of cancer in man seems contributable in large measure to primary cancer of the lung. Cytological methods are proving of great value as diagnostic aids, but there are many obvious reasons why their application is limited.

Abrasion microbiopsy testing can be quickly and easily done. No increased local anesthesia is necessary. In most cases the patients are unaware that the particular test is being done. Occasionally, slight bleeding of a few minutes' duration has been noted.

Summary

A modified and improved abrasion microbiopsy instrument, useful in obtaining material for cytological interpretation from the trachea, main and segmental bronchi, is presented. It has been designed for use through a bronchoscope and is recommended when there is any question of the presence of bronchogenic carcinoma. It eliminates the use of repeat roentgenography when cytology is positive, and reduces the amount of roentgen-ray exposure in suspect cases. With it, correct diagnoses of malignancy have been made in cases where all other methods failed (fig. 2). In some cases, where the roentgenography was either positive or suggestive of malignancy, and the abrasion study was negative, the correctness of the latter diagnosis was sustained either by exploratory operation or by the subsequent clinical course.

135 E. 65th St. (21).

This instrument was part of a Scientific Exhibit at the American Medical Association Convention, New York, June, 1957.

Mr. Jack Harris, consultant on instrumentation, Department of Biology, New York University and the Cytology Institute for Cancer Detection and Research, built this instrument.

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LEG INJURIES IN CHILDREN.—In the examination of injured infants and young children up to the age of four or five years, clinical diagnosis as to site of injury may be quite unreliable. For this reason, a much larger area should be included in the film study, particularly when extremities are involved. It is a frequent experience to have a child of two or three years referred for roentgen study of the hip or upper leg because he refuses to walk after an injury. Many times, a fracture in the lower end of the tibia will be found if the entire leg is included on the films. Even when no fracture is seen, it is obvious that a significant injury has occurred if the young child will not walk or use an extremity. In this situation, it is important that the radiologist define the limitations of the roentgen examination to the referring physician and suggest that re-study be considered if the symptoms continue for a week or ten days. If this is done, some of these patients will show early callus formation at the site of an incomplete greenstick fracture that could not be seen on the original films.—R. P. Barden, M.D., Bread and Butter, editorial, *Radiology,* December, 1957.

DIAGNOSTIC PROBLEMS

HEART FAILURE, FEVER, AND SPLENOMEGALY IN A MORPHINE ADDICT

Clinical Pathologic Conference (PM 566-57), Oct. 10, 1957, from the Department of Pathology and the Hektoen Institute for Medical Research of Cook County Hospital, Chicago, presented for publication by Daniel S. Kushner, M.D., and Paul B. Szanto, M.D.

Clinical Data

A 40-year-old man entered Cook County Hospital on March 23, 1957, complaining of progressive exertional dyspnea, chest pain, mild orthopnea, intermittent ankle edema, night sweats, marked weight loss, and enlargement of the abdomen of three months' duration. For one month, he had had rhinorrhea, sore throat, mild cough, chills, fever, weakness, and epistaxis. He had also complained, since childhood, of urinary frequency (every 45 minutes), nocturia (15 to 20 times), polydipsia, dysuria, and urinary dribbling.

His history revealed gonorrhea at the age of 17 and jaundice at the ages of 17, 23, and 37 years. He was divorced, lived alone, and had worked as a waiter and bartender. He smoked one pack of cigarettes daily, and in the past had used alcohol heavily. He had been a morphine addict intermittently for 17 years, taking 30 mg. three times daily intravenously, but he had not taken morphine for three and a half months prior to admission.

He appeared to be chronically ill, thin, and pale. His blood pressure was 130/85 mm. Hg, pulse 108 per minute, respirations 28 per minute, and temperature 98.6 F (37 C). He was mildly orthopneic. There was mild conjunctival icterus, and an ulcerated area with bleeding points on the left side of the nasal septum. Almond-sized, discrete, tender lymph nodes were noted in the axillas, and pea-sized nodes were present in the cervical and inguinal regions. The lungs were clear. The heart was not enlarged. A systolic murmur was present at the base. The second aortic sound was louder than the second pulmonic sound. The abdomen was protuberant. The liver was tender, extending 5 fingerbreadths below the costal margin; its surface was suggestively nodular. The spleen, also tender, extended 7 fingerbreadths below the costal margin, almost to the iliac crest. Ascites was present. Rectal examination revealed a small prostate, brown stool, and a negative benzidine test. Examination of the extremities revealed 3+ pitting edema, muscular weakness, and the characteristic needle marks of the narcotic addict. There was no clubbing of the fingers or toes.

Urinalysis revealed specific gravity ranging from 1.010 to 1.016; 0 to 2+ proteinuria, a trace of urobilinogen and 3 to 50 red blood cells, 3 to 20 white blood cells, occasional red blood cell cast, and 2 or 3 granular casts per high-power field. A tuberculin skin test was positive with use of a dilution of 1:100. One blood culture was negative, and a second revealed a yeast-like organism. Ascitic fluid culture revealed Escherichia coli. The arm-to-tongue circulation time was 20 seconds with use of magnesium sulfate. The bone marrow showed moderate hypercellularity; normal megakaryocytes; a nucleated red–white blood cell ratio of 1:1; normoblastic erythropoiesis; markedly toxic granulopoiesis; slight increase in lymphocytes, eosinophils, monocytes, histiocytes, and plasma cells (tables 1 and 2).

After admission, the patient had chills and fever, with temperature ranging to 105 F (40.5 C). Two grams of tetracycline and 100 mg. of cortisone were given daily throughout the hospital stay. He initially became afebrile, but later his temperature ranged from 100 to 100.6 F (37.7 to 38.1 C). Additional therapy consisted of vitamins, meralluride (Mercuhydrin) sodium, and supplemental doses of potassium chloride. The patient's edema persisted. The spleen slowly became smaller and less tender, but the hepatomegaly persisted. One week before death, paracentesis revealed clear fluid with a specific gravity of 1.010 and a protein content of 0.5 Gm. per 100 ml. The next day petechiae were observed over the upper extremities. Corticotropin infusions, 40 units daily, were begun, and 2 Gm. of streptomycin and 400 mg. of isoniazid were given daily. The day before death, tonic convulsions involved the face and right side of the body; the pupils were dilated; he bled from the gums and tongue, and had coffee ground emesis. He lapsed into coma, and died on April 28, four months after the onset of illness.

Clinical Discussion

Dr. S. Howard Armstrong Jr.: This unhappy patient was a bartender, who had used morphine intermittently for 17 years. In this hospital heroin

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addicts are more commonly seen than morphine addicts. The heroin addict is usually admitted with hepatitis or tetanus, and most are dead long before their 30th year. Morphine is a comparatively difficult drug to use because its potency is about one-tenth, milligram for milligram, that of heroin. Hospital personnel are particularly susceptible because of the ready availability of the drug. My own experience with morphine addiction comes from teaching hospitals where, in the last 20 years, I have had partial responsibility for four addicts, all of whom were members of the house staff. Of these, two are completely rehabilitated, one is not rehabilitated, and one has been lost sight of. One patient was withdrawn from morphine by substitution of codeine.

TABLE 1.—*Hemogram**

Date	Hemoglobin, %	Erythrocytes, Million per Cu. Mm.	Leukocytes, per Cu. Mm.	Platelets	Neutrophils, %	Band Cells, %	Eosinophils, %	Basophils, %	Lymphocytes, %	Monocytes, %
3/25	56	3.28	5,380	decreased	61	18	1	1	19	0
3/28	69	3.98	4,250	decreased	66	25	0	0	2	7
4/ 9	51	2.89	3,100	OK	57	9	0	0	17	17

* Smears revealed: 1+ anisocytosis, poikilocytosis, polychromatophilia, toxicity, and occasional burr cells. No malarial parasites observed. Hematocrit 32%, prothrombin time 21 seconds (23% of control), platelet count: 10,000 per cubic millimeter (3/27); 179,100 (3/29); 310,440 (4/2); and 90,000 (4/26).

No one has yet succeeded, despite intensive efforts in synthetic organic chemistry, in dissociating the addictive from the analgesic and other effects of morphine.[1] Many synthetic substances still retain addictive properties, even demonstrable in tissue culture, indicating their profound biological effects, but some of the drugs of the methadone group have a different ratio of addictive to analgesic effect. The clinical entity of morphine addiction and the withdrawal syndrome and its therapy have been thoroughly reviewed.[2] Turning back to the patient under consideration, three months before admission he had symptoms characteristic of cardiac failure: dyspnea, orthopnea, edema, and exertional chest pain. His heart size and blood pressure were normal, and there was no evidence of valvular disease, except for the description of a basal systolic murmur. The second pulmonic sound was not accentuated, which is of some interest in the light of experimental chronic morphine intoxication in monkeys leading to organic pulmonary changes, but this has not been observed in human beings. The circulation time was prolonged.

Dr. Jacob W. Fischer: The electrocardiogram shows low voltage but T waves of good amplitude. I would conclude that the electrocardiogram is normal.

Dr. Armstrong: There is a marked discrepancy between the three-month-old symptoms of cardiac failure and the relatively negative cardiac examination. In addition, another group of symptoms of one month's duration consisted of running nose, nosebleeds, sore throat, cough, chills, fever, and malaise. Rhinorrhea, excessive lacrimation, shakiness, weakness, malaise, and chilly sensations are classic narcotic withdrawal symptoms, but sore throat and cough demand another explanation. On physical examination, the emaciation could be attributed to long-standing narcotic addiction, especially if combined with chronic alcoholism. No pupillary abnormalities were described, suggesting that he had not had morphine just before admission, since there is no development of pupillary tolerance to chronic morphine administration. Nothing was found in the pharynx or lungs to account for the sore throat and cough.

No mention was made of nodular masses palpated in the left colon as one might expect to find in the chronically constipated morphine addict. However, both liver and spleen were very large and tender, and ascites was present. Too little emphasis is given generally to the relationship between cardiac and hepatic disease and narcotic addiction. Morphine addiction, and in fact any intravenous drug addiction, is associated with four infectious diseases: malaria, tetanus, bacterial endocarditis, and viral hepatitis. Malaria may be needle-transmitted from other addicts who harbor active plasmodia; this situation is becoming rare in the United States. Tetanus is more frequent with heroin addicts who are careless about needle sterilization. Subacute bacterial endocarditis is a well-known complication of morphine addiction. The problem arises whether endocardiosis or rheumatic valvulitis is always underlying or whether the endocarditis can be superimposed on entirely

TABLE 2.—*Summary of Biochemical Data*

Laboratory Values	3/25	3/28	4/5
Nonprotein nitrogen, mg./100 ml.	27		32
Total protein, Gm./100 ml.	6.8	7.0	6.0
Albumin, Gm./100 ml.		2.4	2.5
Globulin, Gm./100 ml.		4.6	3.5
Cholesterol, mg./100 ml.	67		
Cholesterol esters, %	24		
Alkaline phosphatase, Bodansky units			4.0
Icterus index, units	17	13	
Cephalin flocculation	4+		4+
Thymol turbidity, units	20.0		13.8
Gamma globulin, Gm./100 ml.	4.07	3.20	2.39
Diastase, units	8		
Mucoprotein		79	
Chloride, mEq./Liter			95.0
Sodium, mEq./Liter			128
Potassium, mEq./Liter			3.3

normal heart valves. One reported case of endocarditis in a morphine addict occurred on an arteriosclerotic valve.

The most common complication of intravenous injection of drugs is viral hepatitis. This patient had both alcoholism and three previous episodes of jaundice. His liver was enlarged; tender, and nodular, raising the strong presumption of postnecrotic cirrhosis. An elevated level of serum gamma globulin, positive cephalin flocculation, high thymol turbidity, and normal or low mucoprotein level are characteristic of postnecrotic cirrhosis.

Dr. William Meszaros: The posteroanterior roentgenographic view of the chest showed normal heart size and configuration. The right lung was clear. Neither hilar shadow was prominent. A hazy density in the left middle and left lower lung fields suggested pneumonitis. The abdominal film showed a large mass in the left upper quadrant with the configuration of spleen. The liver shadow was not well outlined, but a hazy density throughout the abdomen was compatible with ascites. The intravenous pyelogram showed the outline of the left kidney and collecting system; it was displaced downward but was not part of the mass, confirming it as spleen.

Dr. Armstrong: The ascitic fluid contained only 0.5 Gm. per 100 cc. of protein and was, therefore, a transudate, suggesting portal hypertension as the primary cause for the ascites rather than an inflammatory process. Subacute or acute bacterial endocarditis could explain the development of chills, fever, petechiae, and cardiac failure. Coronary seeding by bacteria from infected heart valves can be associated with diffuse septic myocarditis, or aneurysm of the aortic sinus; either could easily explain the congestive failure and even exertional angina. Thus can one explain the development of cardiac failure in the absence of functionally significant valvular disease. From one of two blood cultures, a yeast-like organism was isolated.

Dr. William Metzger: The organism could not be identified as a pathogenic yeast. On the basis of the frequency of yeast-like skin contaminants in blood cultures, I would regard it as a saprophyte.

Dr. Paul B. Szanto: What about Candida albicans?

Dr. Metzger: It could not be identified as a Candida species.

Dr. Armstrong: Persons in occupations which require keeping their hands in water get Candida infections; this includes housewives and also bartenders. Monilial endocarditis has been observed in morphine addiction. This bartender could have gotten a paronychia infected with Candida with which he might have contaminated his venous blood in the process of self-injection with morphine. The therapy with tetracycline diminished but did not eradicate his fever, although his chills abated. Although he was given cortisone, which could have facilitated spread of infection in the absence of available specific antifungal or antibacterial therapy, he did improve somewhat. Eventually a systemic dissemination of infection did occur. One could relate his leukopenia to the hypersplenism of cirrhosis. Because the spleen was tender, I would expect splenic infarcts, embolic from the infected heart valves, and not just the congestive splenomegaly of cirrhosis. The intermittent microscopic hematuria I would relate to embolic focal glomerulonephritis. Terminally the focal convulsions suggest cortical brain hemorrhage. My diagnosis is chronic hepatitis, with postnecrotic cirrhosis, and subacute bacterial (or fungal) endocarditis.

Dr. Frederick Steigmann: This patient had only one chill and the high temperature lasted only two days. Not infrequently, especially in elderly patients, so-called cardiac symptoms in cirrhotics are in reality related to severe anemia. Several things point to the diagnosis of postnecrotic cirrhosis, especially the episode of jaundice at the age of 17, before he was a narcotic addict or an alcoholic. Also in postnecrotic cirrhosis the spleen is frequently much larger than the liver, as opposed to nutritional cirrhosis. I wonder about the large glands in the axilla.

Dr. Armstrong: They were only almond-sized and may have been nonspecific.

Dr. Benjamin Gasul: It is time that we discarded the comparison, "The second aortic sound was louder than the second pulmonic," because there is no such thing as a second pulmonic sound. In the aortic area, a single sound is heard due to closure of the aortic valve. In the pulmonic area, two sounds are audible due to closure of the aortic valve followed by closure of the pulmonic valve. Therefore, the correct statement should be, "The second component of the pulmonic second sound is accentuated."

Dr. Louis Feldman: There is a possibility that the right side of the heart was involved by the endocarditis, producing bacterial emboli in the lung. Since the bacteria would be filtered out by the pulmonary capillaries, blood cultures would be negative.

Clinical Diagnosis.—The clinical diagnosis was subacute bacterial (or fungal) endocarditis and postnecrotic cirrhosis.

Pathologist's Report

Dr. Szanto: The three roads which lead the heroin and morphine addict to the pathologist (tetanus, viral hepatitis, and bacterial endocarditis) have already been discussed. Inspection of the body revealed no evidence of malnutrition. Numerous petechiae and ecchymoses were scattered over the skin. A few petechiae were also seen in the conjunctivae. A large mass was palpable in the left upper abdominal quadrant. There was pitting edema of the lower extremities. The peritoneal cavity contained 2,500 cc. of serous fluid. Numerous ecchymoses of the serosal surfaces were present. The left pleural cavity contained 450 cc. and the right 200. cc. of serous fluid.

The repeated episodes of jaundice from the age of 17 may have resulted from a viral hepatitis leading to postnecrotic cirrhosis. The liver was enlarged (1,900 Gm.), firm, and diffusely nodular. The nodules were generally uniform in size, although larger nodules were present on the inferior surface. The uniform fine granularity speaks for Laennec's (septal) cirrhosis, but the large nodules on the inferior surface would support the clinical diagnosis of postnecrotic cirrhosis. On the basis of gross appearance, this would appear to be a postnecrotic cirrhosis with transition into Laennec's cirrhosis. Cut sections revealed uniform nodularity and connective tissue septums dissecting the normal parenchyma. Histologically, extensive reconstruction was present. The absence of normal portal fields within the large nodules and the absence of completely collapsed lobules in broad bands of connective tissue may be used as arguments against the diagnosis of postnecrotic cirrhosis. It is possible that the patient originally had postnecrotic cirrhosis developing from a viral hepatitis, with subsequent changes aggravated by nutritional deficiency, secondary to alcoholism, presenting terminally the gross and microscopic appearance of Laennec's (septal) cirrhosis. This cirrhosis may at least partially account for the severe ascites. Large esophageal varices in the lower part of the esophagus and cardia of the stomach confirm the presence of portal hypertension of a far-advanced hepatic cirrhosis.

Portal and splenic veins were free of thrombus. Moderate pancreatic fibrosis was present, as is seen in cirrhosis, as a result of nutritional deficiency. The spleen was markedly enlarged (1,750 Gm.), extending 10 cm. below the costal arch. A few anemic infarcts explain the left flank tenderness. The microscopic appearance of the spleen differed from that seen in chronic congestive splenomegaly. The typical fibrocongestive splenomegaly of hepatic cirrhosis is characterized by a pseudoglandular appearance, with wide sinuses lined by swollen endothelial cells and fibrosis of the intersinusoidal cords. In this case, the sinusoids were engorged and there was no evidence of fibrosis. The follicles were small, and they showed prominent central arteries. Numerous plasma cells and polymorphonuclear leukocytes were present in the red pulp. This was a subacute infectious splenitis, which may have been superimposed on a preexisting fibrocongestive splenomegaly. The degree of splenomegaly in cirrhosis is variable but not as great as is often assumed. In a survey in our department of 1,426 cases of cirrhosis, the spleen weighed less than 300 Gm. in 59% of the cases; between 300 and 600 Gm. in 32.5%, and over 600 Gm. in 8.5% of the cases. Therefore, to explain such marked splenomegaly as was present in this case, we must consider some factor such as infection or lymphoma.

The clinically enlarged superficial lymph nodes contributed to the diagnostic difficulties. Microscopically, they showed only chronic lymphadenitis, as is frequently found in narcotic addicts. The bone marrow in the diaphysis of the long bones was red, and microscopically showed marked reactive erythromyelopoietic activity. The lungs contained foci of septal and interstitial fibrosis, the appearance of chronic pneumonitis. A healed apical tuberculosis was also present.

Another possible focus of infection explaining the chronic splenitis could be the heart. The heart was not enlarged (350 Gm.). Prominent trabeculae of the right ventricle, and the presence of pulmonary sclerosis pointed toward increased pulmonary arterial pressure, perhaps related to the chronic pneumonitis. The left atrium was normal, as was the circumference of the mitral valve ring (12 cm.). The mitral leaflets and chordae tendineae were diffusely thickened. Superimposed on this old healed process, on the atrial surface of the valve, were two equal-sized, moderately friable, brownish, granular vegetations (fig. 1). Histologically, the superficial layer of the vegetation consisted of fibrin with some leukocytes. Acute and chronic inflammatory cells were present beneath this layer, as seen in so-called subacute bacterial endocarditis. In some areas, gram-positive organisms could be demonstrated on the surface of the vegetation. Whenever we find bacteria on the surface of a vegetation, we would expect that blood cultures

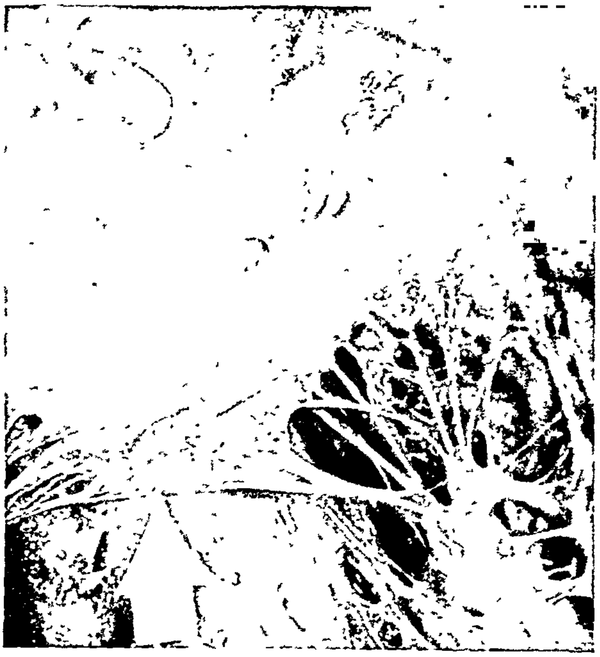

Fig. 1.—Large vegetation on atrial surface of mitral valve between two leaflets.

taken during life should be positive. This emphasizes the importance of intensive expert bacteriological studies of repeated blood cultures in patients suspected of having bacterial endocarditis. Anaerobic as well as aerobic cultures should be made and observed for several weeks before discarding. The myocardium showed old spindle-shaped scars and evidence of a more recent moderate interstitial myocarditis, findings which typically accompany endocarditis.

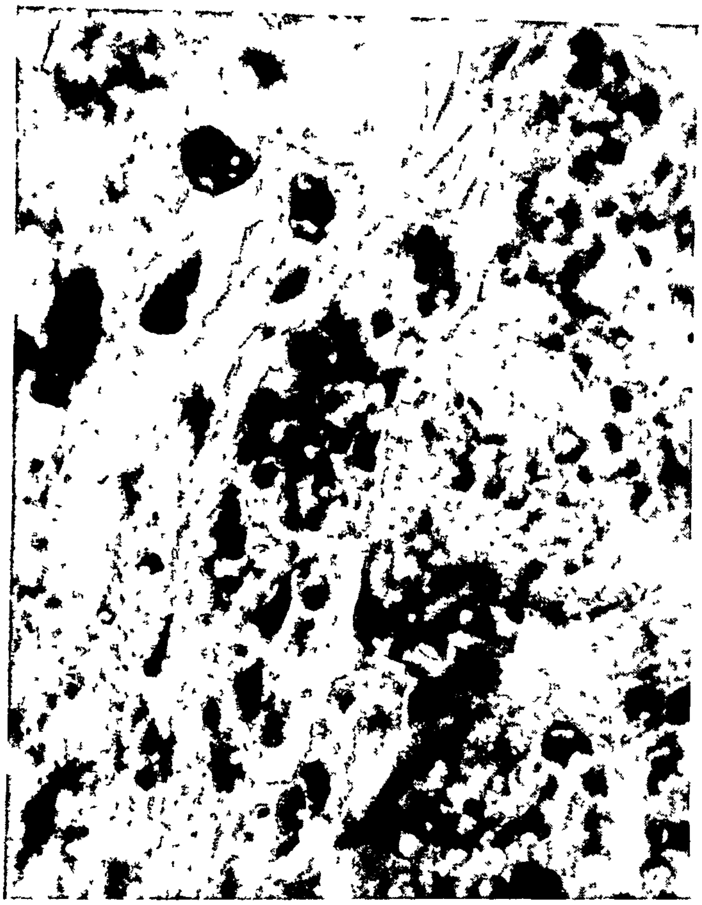

Fig. 2.—High-power view of vegetation, showing clusters of yeast cells.

The classic sharp distinction between acute and subacute bacterial endocarditis is not justified, because of the changing anatomic picture under the influence of antimicrobial therapy. An etiological classification is preferable, since modern antimicrobial therapy may modify the natural history of endocarditis.

In addition to the gram-positive organisms, one section through the vegetation on the mitral leaflet showed clusters of fungi (fig. 2), which could be classified with the Candida species, although no cultural confirmation was possible. A heroin or morphine addict may develop mycotic endocarditis, usually due to Candida albicans. In my opinion, this patient originally had bacterial endocarditis and developed a superimposed mycotic endocarditis.[3]

The target organs involved in bacterial endocarditis are the kidney, spleen, brain, and skin. The kidneys weighed 350 Gm. together, and showed a few distinct petechiae on their surfaces. Interstitial infiltration by inflammatory cells and segmental fibrinoid degeneration of a few glomeruli suggested focal "embolic" glomerulonephritis (fig. 3). A few anemic infarcts were also seen. Focal glomerular lesions are usually associated with microscopic hematuria, while renal infarction more often leads to gross hematuria. It must be emphasized that the microscopic hematuria of endocarditic focal glomerulonephritis is typically transient. Therefore, one must daily examine the urinary sediment, because the finding of transient microscopic hematuria is almost as pathognomonic as a positive blood culture. The focal "embolic" glomerulonephritis is not due to bacterial emboli, but is a fibrinoid necrosis, presumably related to a hyperimmune state developing due to continued or transient bacteremia. As a result of the fibrinoid necrosis, the capillaries rupture, the erythrocytes reach Bowman's space, and eventually hematuria occurs (fig. 4).

A patient with subacute bacterial endocarditis may have either infarcts or focal embolic glomerulonephritis. In this instance, both were present. Diffuse glomerulonephritis, which infrequently occurs in bacterial endocarditis, was not present in this case.

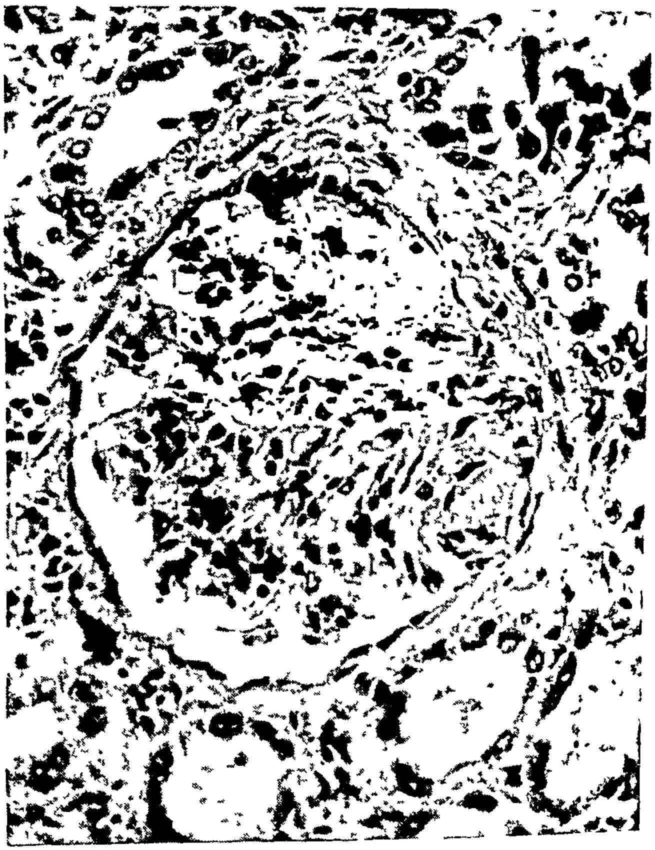

Fig. 3.—Focal fibrinoid degeneration of glomerular tufts ("focal embolic glomerulonephritis").

This patient had tonic convulsions, and correspondingly perivascular cuffing, foci of microglia cells, and microabscesses were found in the subcortical white matter of the brain. Some vasculitis with focal hemorrhages was seen in the same areas. In addition, a massive cerebral hemorrhage practically destroyed the left frontal and occipital lobes (fig. 5), resulting in a subarachnoid hemorrhage.

No mycotic aneurysm, as characteristically may occur in bacterial endocarditis, and the rupture of which could account for the massive hemorrhage, was present in this case. The described microscopic vasculitis may account for this cerebral hemorrhage, but its massive character suggests that the thrombocytopenia related to hypersplenism may have played a role in the precipitation or aggravation of the hemorrhage.

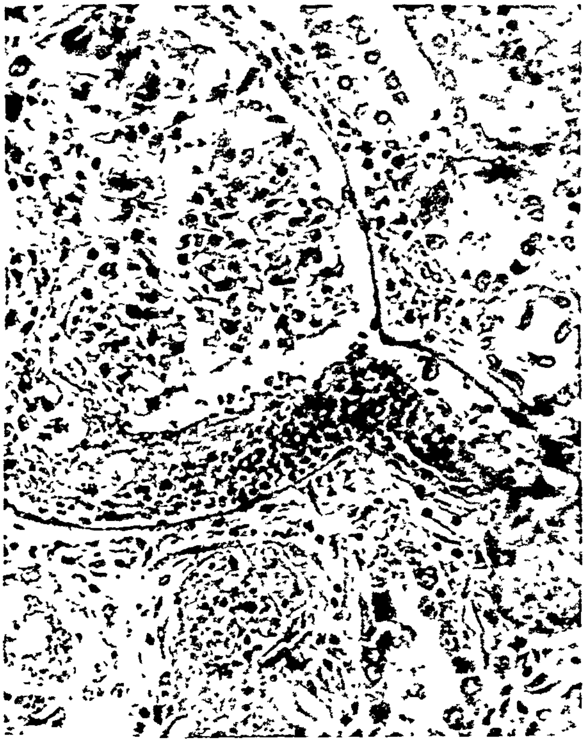

Fig. 4.—Hemorrhage into Bowman's space (leading to microscopic hematuria) secondary to fibrinoid degeneration.

Pathological Diagnosis.—The pathological diagnosis was bacterial and mycotic endocarditis superimposed on fibroplastic deformity of the mitral valve; focal endocarditic glomerulonephritis; multiple renal infarcts; Laennec's cirrhosis; splenomegaly (due to fibrocongestion and chronic splenitis); and massive cerebral hemorrhage.

Comment

Dr. Szanto: This patient had viral hepatitis many years ago. He was a chronic alcoholic and developed cirrhosis, which may have been originally of postnecrotic type with transition into Laennec's (septal) cirrhosis. He developed bacterial endocarditis, one month prior to his death, possibly secondary to pneumonia. Superimposed on the bacterial endocarditis, he developed a systemic mycotic infection, resulting in mycotic endocarditis. The red blood cells in the urinary sediment were due to focal embolic glomerulonephritis and, finally, the terminal convulsions were due to massive hemorrhage secondary to thrombocytopenia, and not due to bacterial emboli.

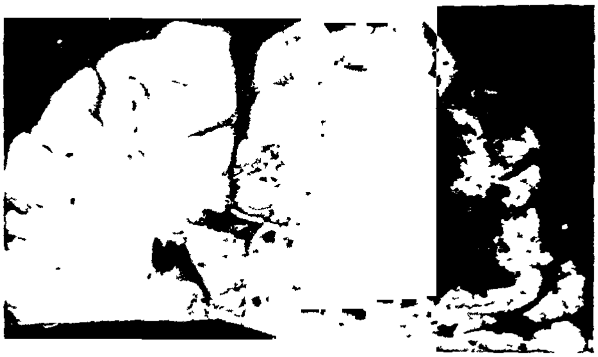

Fig. 5.—Massive hemorrhage destroying right frontal lobe, leading to subarachnoid hemorrhage (horizontal section).

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A NEW VIRUS.—The agent described in this paper is considered to be a newly-recognized arthropod-borne virus. Infection with this virus seems to be fairly prevalent in C. tarsalis in California, the recovery rate of the virus being approximately 3 per cent of all the pools tested. Infection is not restricted to C. tarsalis, however, since three strains were recovered in 1956 from Culex stigmatosoma. With respect to C. tarsalis, evidence of infection in this species appears during June or early July, the infection rate becomes maximal during July and thereafter diminishes, to fall to nondemonstrable levels by October. . . . The role of the Turlock virus, if any, in the causation of human or animal disease has yet to be determined. Information thus far acquired, and based on limited material, suggests that human infection with the agent is not common. Likewise, no evidence was obtained that this virus is etiologically involved in the human encephalitides.—E. H. Lennette. M. I. Ota, F. Y. Fujimoto. A. Wiener, and E. C. Loomis, Turlock Virus: A Presumably New Arthropod-Borne Virus: Isolation and Identification, *The American Journal of Tropical Medicine and Hygiene,* November, 1957.

COUNCIL ON FOODS AND NUTRITION

Report to the Council

The Council has authorized publication of the following report. This article is part of a nutrition education program which is assisted by the Nutrition Foundation, Inc.

PHILIP L. WHITE, SC.D., *Secretary*

FEEDING OF INFANTS AND CHILDREN IN HOT WEATHER

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and
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When the weather is hot, parents frequently consult their physicians as to the desirability of changing the dietary patterns of their families. Should salt be added to the diets of their children? Should certain foods be prohibited? Is it necessary to change the food mixture for the baby? Should modifications be made in the diets of infants and children when the environmental temperature is high? Do special psychological problems related to eating arise during hot weather? There is little scientific data concerning the effects of climate on the dietary requirements of infants and children, but pediatricians practicing in areas where prolonged periods of hot weather occur have amassed a considerable body of experience. This report combines these sources of information.

Analogies drawn from the food habits of the native populations in tropical or desert regions are not helpful, because the native diets are largely determined by factors of availability, social customs, and economics, rather than by those related to health or comfort. In general, prosperous individuals in such areas gradually assume diets similar to those of well-to-do people living in temperate zones.

Nutrient Requirements

Proteins, Minerals, and Vitamins.—The requirement for protein seems to be unchanged or possibly is increased in hot weather.[1] When sweating is profuse, there are probably increased skin losses of water-soluble vitamins, calcium, and iron. A decade ago the beneficial effects of increased vitamin C or thiamine intake on work performance in hot weather were promoted in the popular press. Subsequent studies, more carefully controlled, have failed to demonstrate any benefit in biochemical, psychomotor, or physiological functions or in protection from heat exhaustion.[2] Thiamine and vitamin C requirements or rates of depletion of these vitamins reveal no differences between summer and winter values.[3] More adequate data concerning children are needed. However, clinical experience would seem to support the conclusion that the preponderance of evidence from human experiments indicates that the vitamin requirements are not increased by residence or by work in a tropical climate.[1] Hot weather appears to impose no special dietary requirements [4] other than the needs for salt and water.

Sodium, Chloride, and Water.—As the environmental temperature approaches skin temperature, the evaporation of water plays an increasing role in heat dissipation. All the loss of heat from the body is accounted for by the evaporation of water from the lungs and skin at temperatures above that of the skin. The amount of water so lost is related to total heat production, to any gain of heat from the environment by radiation, conduction, or convection, and to the temperature and humidity of the surroundings. Sweat losses averaging 56 cc. per kilogram of body weight per 24 hours were measured from nude infants in a room kept at a temperature of 91 F and at low relative humidity.[5] Sweat losses as high as 100 cc. per kilogram of body weight per day were found in infants ill with diarrheal disease who were studied in nonairconditioned wards in Galveston and Dallas, Texas.[6] Under severe conditions adults may lose 5-10 liters of water as sweat per day.

Water deficits as low as 1-2% of the body weight may produce measurable adverse effects on the

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From the Department of Pediatrics, University of Texas Southwestern Medical School, the Children's Medical Center, and Parkland Memorial Hospital circulation of blood and the body's tolerance to heat.[7] The greatest efficiency is achieved by both infants[5] and adults[1] when water losses are replaced hour by hour. However, men and children who are acclimated seem to accumulate slight water deficits voluntarily during the day, but they make up these deficits at mealtimes and during the evening.[7]

The concentrations of sodium and chloride in sweat are dependent on numerous factors.[8] In healthy individuals acclimated to heat, the concentrations of sodium and chloride are quite low. In healthy infants, these concentrations, calculated from total skin washings and the estimated volumes of sweat, averaged 4.8 mEq. of sodium and 6.1 mEq. of chloride per liter of sweat.[5] Although the concentrations of these electrolytes in sweat may be as low in adults, they are often three to five times as high.[7] Studies of both infants and adults indicate excessive sodium chloride intake to be deleterious to the adjustments to heat stress; thus, it should be avoided.[9] The intake of sodium and chloride in the ordinary diets of healthy infants appears to be adequate, judging from extensive practical experience and from the scanty data available. If table salt is used in ordinary amounts in the preparation of foods for acclimated older children and adults and is available to them to be added at the table according to desire, there appears to be no need for specifically prescribing additional sodium chloride, either as tablets or as treated drinking water, except under conditions of great physical activity associated with extremely large outputs of sweat.

It should be clear that these statements concerning the adequacy of dietary sodium and chloride apply to healthy infants and children maintaining normal intakes. Cardullo,[10] Evans,[11] and Kessler and Anderson[12] have discussed the adverse effects of heat on hospitalized infants and children. The administration of sodium and chloride was clearly of benefit to those patients who had "salt" depletion due to diminished intake in hot weather because of infection, recurrent vomiting, or injuries. Depletion was also caused by losses of electrolytes from the gastrointestinal tract or by abnormally high concentrations of sodium and chloride in the sweat of patients with pancreatic fibrosis. The frequency and seriousness of hyperpyrexia during hot weather in infants with cerebral damage is stressed by Cardullo.[10] The administration of added sodium chloride to the formulas of healthy infants did not alter their course, but some refused the "salt feedings."[10]

Although it is implied that the addition of sodium chloride to the diet might be useful for healthy infants, no evidence has been presented to support this contention. Practical experience indicates that whenever an infant or child on a usual diet suffers from heat stress, the likelihood is great that the individual is ill and merits further investigation, particularly for pancreatic fibrosis, adrenal insufficiency, or incipient diarrheal disease.

Eating Habits and Psychological Problems

The practitioner accustomed to the problems of children's eating habits during hot weather finds no great difficulties. The observed changes in eating and living habits are related to attempts to keep cool. Children appear to reduce their caloric intake and diminish their rate of weight gain, while maintaining their rate of gain in height in warm weather. There is a strong desire to drink and eat cold liquids and foods, some of which, like ice cream, may be high in calories. When children are at active outdoor play, they need a considerable fluid intake. If parents permit, many children will drink two or more quarts of cold milk or sweetened carbonated beverages. Even cold water, if taken shortly before meals, appears to suppress the appetite temporarily, thus producing poor mealtime habits or attitudes.

During recent summers a "new syndrome" has appeared. It is characterized by the pale, flabby, tired child who has gained excessive weight during the warm weather because he has stayed indoors in an airconditioned house watching television most of his waking hours and has indulged in frequent between-meal snacks that have spoiled his appetite for well-balanced meals.

Practical Management

An adequate fluid intake should be assured for infants by regularly offering them a few ounces of water between feedings. In artificially fed infants, it may also be desirable to reduce the caloric concentration of the food mixture to approximately 18 calories per ounce during hot weather.

Individualized management of children during the summer is the best assurance of maintaining good nutrition. However, the following guides are those most often required.

1. The habit of vigorous outdoor activity should be continued or developed. Children do not mind hot weather unless they are conditioned by their elders to dislike it.

2. Cool, but not cold, drinks are best, and, for the most part, water should be used to quench thirst. Evening intake of water should not be unduly limited.

3. Between-meal foods and high-caloric drinks may have to be controlled.

4. A short "cooling-off" and quiet period before meals may increase the child's appetite.

5. Limiting of high-caloric foods, such as peanut butter and ice cream, may be necessary. For some children, the use of skimmed milk may be advisable to promote a better appeite for other foods.

6. The large and better balanced meal may best be served in the *evening* when the temperature is lower.

7. All of the usual measures and guides for developing good eating habits should be continued, irrespective of the weather.[13]

Summary

Hot weather imposes no special dietary requirements for healthy infants and children, except for an increased water intake. If infants and children ingesting well-balanced diets do not tolerate ordinary heat stress, they should be investigated for illness rather than changing their diets. Poor appetites and faulty eating habits may result from the uncontrolled use of cold, high-caloric drinks or foods, from failure to take adequate outdoor exercise, or from overindulgence in between-meal snacks. It is unwise for adults to "condition" children to dislike hot weather or to foist summertime food fads on them.

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HAZARDS OF OVERTRANSFUSION.—Excess transfusions do not produce arterial hypertension; rather, they produce overfilling and, after failure has begun, hypotension. The differentiation of hypotension due to inadequate transfusion from the hypotension due to left heart failure will be the duty of the physician officiating at the transfusion. The clinical picture of overloading of the left heart is that of acute left heart failure with pulmonary edema. If the patient is awake, he will become restless, have respiratory difficulty and dyspnea. The jugular veins and other peripheral veins are distended, venous pressure is elevated, and the patient will have a plethoric appearance. As pulmonary edema develops, this color tends to become cyanotic in tinge, the respiratory rate increases, audible rales are noted and frothy tracheal mucus may be coughed up, or will appear in the endotracheal tube. Increase in pulse and progressive hypotension will be encountered. The treatment depends in some degree upon the extent of the overtransfusion. Rapid removal of the excess blood must be carried out to remove the strain on the heart. To this end, usually 500 cc. of blood is withdrawn into a transfusion bottle. It is probably not wise to withdraw more than this at one time. Rather, one should observe the response to this one bloodletting, which may be dramatic. The heart may adjust and recover within minutes. Rarely a second bloodletting will be needed. —V. L. Guynn, M.D., and J. T. Reynolds, M.D., The Use and Abuse of Blood Transfusions, *The Surgical Clinics of North America,* February, 1958.

COUNCIL ON INDUSTRIAL HEALTH

The following report has been prepared by the Committee on Occupational Cancer of the Council on Industrial Health.

B. Dixon Holland, M.D., Secretary

OCCUPATIONAL CANCER

METHODS OF EPIDEMIOLOGICAL STUDY

The first form of cancer with an identified causal factor was described nearly two centuries ago. It occurred with unusual frequency among workers in a single occupation and, hence, became known as chimney-sweep's cancer. In spite of the fact that the first knowledge of the etiology of cancer can be traced to Percival Pott's [1] observation on chimney-sweeps, we have no reliable information today from which a reasonable estimate can be made of the proportion of cancers that have some causal relationship to an exposure of occupational or industrial origin. Although a number of specific types of cancer have been associated with occupational exposures since Percival Pott's original studies, there is no reason to believe that these exhaust the possible list of such cancers.

In recent years, an increasing amount of scientific literature has appeared on the subject, confusing, at times, both the physician in private practice and the full-time industrial physician. Part of this confusion arises from the fact that occupational cancer is different from many other well-known occupational diseases, more difficult to identify, and, hence, more difficult to study. Experience has demonstrated that the identification of occupational or industrial causes of human cancer is made difficult by certain characteristics of cancer itself, as well as by labor mobility. Occupational cancers can rarely be distinguished on morphologic grounds from those due to other causes. Furthermore, several years may elapse between the date a worker is first exposed to an agent capable of causing cancer and the time of development of a tumor to the stage where it can be clinically recognized.

From a study of 300 cases of mule-spinner's cancer reported in England and Wales from 1920 to 1928, Henry [2] found that the time elapsing from the date of starting work as a mule spinner until the date of diagnosis of cancer ranged from 16 to 63 years and that for 67% of the cases this latent period varied between 35 and 54 years. Several of the workers were no longer employed in this occupation at the time of diagnosis. The average latent period for mule-spinner's cancer is appreciably longer than that for some other forms of occupational cancer. However, a latent period of several years is characteristic of most cancers. For example, the average interval from initial exposure to diagnosis of lung cancer among workers in United States chromate-producing plants was 17 2 years, with a range of 4 to 47 years.[3]

Finally, there is a "normal" or "expected" incidence of cancer, whereas most occupational diseases do not "normally" exist. Thus, if a man develops silicosis, it probably arose as a result of his occupation, since this disease does not have a "normal" incidence. Accordingly, it becomes necessary in the study of occupational cancer to establish that the disease occurs either at a higher than normal incidence in a given occupation or with a greater relative frequency of site or type, so that there is no doubt about the causal relationship between the disease and the occupation. For this reason, single case reports of silicosis, lead poisoning, or other occupational diseases may make significant contributions to our understanding of most occupational diseases, but individual case reports really contribute little to our understanding of occupational cancer. The same problems have arisen in attempts to relate trauma to cancer—and for the same reasons. These difficulties have led to vigorous debates in the scientific literature, which have perhaps been best summarized by Stewart.[4]

The past three decades have witnessed the birth and large-scale development of experimental methods for the study of carcinogenesis. This has permitted identification of an extensive list of chemical compounds capable of causing cancer in animals in specific experimental situations.[5] A number of these compounds are encountered in various manufacturing processes. It is not correct to assume from these two facts that the risk of cancer developing

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Chairman of the Committee on Occupational Cancer is G Burroughs Mider, M D , associate director in charge of research, National Cancer Institute, Bethesda, Md Members of the Committee are as follows Harold F. Dorn, Ph D , Biometrics Branch, Division of Research Services, U S Public Health Service, Department of Health, Education, and Welfare, National Institutes of Health, Bethesda, Md , John G Downing, M D , Boston, Robert E Eckardt, M D , director, Medical Research Division, Esso Research and Engineering Company, Linden, N J , Mr. Edward A. Lew, Metropolitan Life Insurance Company, New York, W. Harvey Maguigan, Ph D , Allied Chemical and Dye Corporation, National Aniline Division, Hopewell, Va , and John J Phair, M D , University of Cincinnati College of Medicine, Cincinnati among industrial workers thereby is either increased or left unchanged. This can be ascertained only by appropriately conducted investigations, and the answer ultimately must be derived from observations on workers in specific occupations and industries.

It is essential, therefore, for the investigator who would study occupational cancer, to have, for comparative purposes, reasonably reliable estimates on the normal incidence of cancer of various types and sites. The collection of such data is a difficult and time-consuming task, requiring almost constant work by a team of trained epidemiologists and statisticians. Cancer incidence increases with age, shows site-specific variations with sex and color, may be modified by geographic factors, and is being continually altered by the aging of the population. In addition, certain specific cancers, such as cancer of the stomach in males, may show unpredictable, unexpected, and unexplained changes in incidence with time. Finally, because of improved diagnostic techniques, greater awareness of cancer, changes in the reporting of disease occasioned by legislative or administrative action, and improved reporting of the cause of death, additional artifacts may be introduced into the calculations. At the present time, the best available rates of normal cancer incidence, prevalence, and relative frequency are those assembled by Dorn and associates.[6] Annual and special reports of the National Office of Vital Statistics provide mortality statistics for the entire country and for various geographic subdivisions.[7] Finally, certain states, particularly Connecticut and New York, have assembled similar data.[8] It is to be hoped that such efforts will be continued and expanded in order that up-to-date, reliable figures will be available for the necessary comparisons, not only to aid occupational cancer studies but also to keep abreast of decade-by-decade changes in cancer incidence and distribution.

The physician of today, and increasingly in the future, will be called on to provide answers as to whether the increased use of a chemical or the introduction of a new chemical has increased old hazards or introduced new ones. If the advancement of the chemical age and the anticipated improvements in standards of living continue, it will be necessary for the physician to keep well in mind the caution so well phrased 10 years ago by Stewart[4]: "It is probable that with the development of chemical industry we will see new chemical cancers and medicine must be on the watch for such developments. But it must refrain from hastily ascribing to industry those tumors whose incidence falls well within the expectations for the population as a whole and from making premature conclusions based on lack of appreciation of statistical methods."

While the study of occupational causes of cancer is complicated, it is not impossible. Since the area of investigation is so broad, a great deal of time and energy can easily be spent in fruitless study unless some preliminary idea can be obtained of those occupations which appear to be associated with cancer hazards. The principal support for such ideas or hypotheses is clinical impressions derived from the study of individual cases of disease and the analysis of existing records of morbidity and mortality. Accordingly, it is believed worthwhile to describe various sources of data now available and to indicate, in summary fashion, certain approaches and techniques that may prove fruitful.

Official Statistics

The official certificate of death required for each deceased person in the United States provides for the entry of his usual (and probably last) occupation and industry. Very little use has been made of this source of information, largely due to uncertainty concerning the comparability of the entries for occupation and industry on death certificates with corresponding data from the census of population. Information on this point soon will be available from current study of the corresponding entries for occupation and industry found on the death certificate and on the 1950 census schedule for a sample of deaths.

At best, official mortality statistics provide a measure of the total effect of an occupation and the general level of living of persons following that occupation. Specific occupational hazards are not likely to be identified by a study of these records. Only one entry for occupation is requested, and frequently either no occupation or an entry of "retired" is reported for persons who have stopped working because of old age. Occupations are described only in general terms, so that it is not possible to identify specific groups of workers who are thought to have been exposed to a suspected health hazard. Furthermore, each industry, and usually each individual company, employs entirely different names for the same job assignment.

In spite of their many defects, mortality statistics, if analyzed with imagination, may provide clues to occupational or industrial hazards which can be explored by more specific studies. The following examples illustrate the types of studies that have been made with death certificates.

Mortality Rates by Occupation.—The information on cause of death and occupation and industry on death certificates and census reports can be used to compute death rates from different forms of cancer. The most extensive series of death rates are those published by the Registrar General of England and Wales. References to these data may be found in an article by Kennaway.[9] A comprehensive study of occupational mortality in the United States has never been made. The National

Office of Vital Statistics has initiated a study based upon deaths occurring during 1950, the preliminary results of which have been reported.[10]

Mortality rates by occupation can be computed for the population of specific localities, for example, a city or county, provided the number of workers is large enough to yield reliable rates. The information needed for such studies is (*a*) the number of deaths of persons in each of the occupations to be studied, and (*b*) the total number of persons in each occupation classification by age and sex. The number of deaths can be obtained from the local or state office of vital statistics; unless special information is available locally, statistics concerning the number of workers by occupation must be obtained from the U. S. Bureau of the Census. Studies should be done for a period near the date of the census of population in order to avoid the necessity of preparing population estimates. A good illustration of this approach has been reported from Sheffield, England, by Turner and Grace.[11]

Mortality Rates for Specific Areas.—The analysis of mortality statistics for cancer of specific sites for local areas, such as a county or group of counties, may be undertaken in order to determine whether an unusually high death rate or an unusually large proportion of deaths exists for a specific form of cancer. Available information concerning possible environmental hazards may be studied simultaneously to determine if there are any that appear to be associated with the known facts about cancer mortality.

These studies may be conducted by systematically studying the variation in cancer mortality among the counties of a state, as was done by Mancuso and others[12] in Ohio, or by analyzing mortality from cancer in an area where an industry whose workers are thought to be exposed to some cancer hazard is located. Projects of this kind are most likely to yield useful leads if a large proportion of workers in the area are employed in a single industry. Mortality rates for total cancer and for cancer of specific sites by age and sex can be computed for a period of several years. If the population under observation is too small to yield reliable age and sex specific death rates, an expected number of deaths can be computed by multiplying the population of the local area distributed by age and sex by the death rates for some appropriate standard population, for example, the population of the state in which the local area is located. The expected number of deaths is then compared with the observed number. For comparative purposes, similar computations should be made for other counties that do not have an appreciable number of workers in the industry in question.

If the deaths of persons who have been employed by a specific industry can be identified, a comparison of the causes of death in this group with those of the rest of the population can be made. The study by Hill and others[13] of workers in a factory handling inorganic arsenic compounds is an excellent example of this method.

Mortality from Specific Forms of Cancer.—Since most of the carcinogenic agents of occupational origin that have so far been identified cause cancer of a specific site, several studies have been made in Great Britain, based on death certificates, with a specific type of cancer, for example, cancer of the skin as the cause of death.[14] The usual procedure has been to review all death certificates filed in a specified area for which population data are available and to compute death rates by occupation. The areas selected for study have been either the entire country or a specific local area where the existence of a cancer hazard is suspected.

Social Security Records.—The records maintained by the Bureau of Old-Age and Survivors Insurance, Social Security Administration, Department of Health, Education, and Welfare, include the employment history of all workers covered by the act since January, 1937. Information may be obtained concerning the name and address of each employer, the dates of employment and the industrial classification of each employer according to a four-digit code. These records may be used by themselves or in conjunction with official vital statistics for studies of mortality among persons who have worked in specific occupations.

For example, one could start with a list of persons who are known to have been employed in a given occupation or industry. Although detailed information usually will not be given out for persons who are still living, the date of death and employment history can be obtained for persons who have died. In this way the subsequent history of part or all of the workers who have left the occupation can be traced. Alternatively, one could start with a group of persons who have died from a specific form of cancer and obtain their previous work history. A control group of persons who died from causes other than the type of cancer being studied should be investigated simultaneously in order to judge whether the number dying from cancer who had worked in a given occupation was large enough to suggest the existence of an occupational hazard.

Occupational Disease Reports.—A survey conducted by the United States Public Health Service in 1953 found that only 28 states had statutes or regulations requiring physicians to report patients suffering from occupational diseases. No serious attempt is made to promote compliance, so that the regulations often are ignored.

A much larger number of occupationally induced diseases are reported in connection with claims for workmen's compensation. About one-half of such diseases are skin disorders. Among the remainder, complaints due to physical conditions of the working environment, systemic effects of chemicals, and infectious diseases are the most common. At best, the claims give only a rough indication of the occurrence of the types of complaints reported. Even where awards have been sustained for occupational cancer, the validity of the alleged causal relationship frequently fails to satisfy critical and competent medical judgment. Neither official reports of occupational diseases nor claims for workmen's compensation have yet yielded useful information concerning the incidence of occupational cancer in the United States.

In contrast, the Factory Inspection System of Great Britain has been an important source of information about occupational cancer. The first medical inspector was appointed in 1898. As presently organized, the medical staff is responsible for the promulgation and supervision of regulations for various occupations, the investigation of cases of industrial poisonings, the study of new industrial processes that may be injurious to health, and the supervision of the work of physicians who give certificates of fitness for work.

A list of lesions that may be caused by known or suspected carcinogenic agents has been established, and these must be reported to the Chief Inspector of Factories. This information is supplemented by inspection of plants where possible carcinogens are produced or handled. Special studies have been made of cancers developing among workers engaged in the extraction, processing, or use of shale oil, petroleum products, asbestos, nickel, and dyestuffs. In 1947, for example, Henry[15] published an analysis of 3,753 skin cancers in 2,975 persons reported to the Chief Inspector of Factories from 1920 to 1945 inclusive. Pitch, tar, or tar-products accounted for about 60% of these cases; shale oil, mineral oil, or bitumen caused most of the remainder.

Insurance Company Statistics

Life Insurance.—Life insurance company follow-up studies have the special merit that they usually deal with relatively large numbers of persons who can be automatically traced for long periods of time through the circumstance of their being insured. A suitable standard of comparison is available in the experience of the aggregate body of insured persons of the particular type. Moreover, in the absence of national mortality statistics by socioeconomic classifications, the experience of different groups of insured persons sheds some light on the relative prevalence of cancer in different socioeconomic classifications.

Life insurance companies maintain detailed records of death claims, disability claims, claims for hospitalization, surgical benefits, and medical expense benefits, as well as special records for medicoactuarial studies and, occasionally, records of periodic health examinations of their employees also. All of these can be tapped for information regarding the prevalence of cancer. It is important to realize, however, that the records maintained by life insurance companies are prepared primarily for administrative purposes and only incidentally yield information about the prevalence of cancer among insured persons.

Generally speaking, from death claim records and records maintained on the insurance in force, it is possible to compute death rates by age, sex, and race for various classes of insured persons. The experience of industrial policy holders of the Metropolitan Life Insurance Company has been reported in a number of studies,[16] which show for the years 1911-1955 the mortality rates by age, sex, and race from cancer of the following sites: digestive organs, female genital organs, breast, buccal cavity, skin, lungs and pleura, bladder, prostate, and other organs. Current information along these lines is published in the Statistical Bulletin of the Metropolitan Life Insurance Company.

Because the applicant's occupation is usually a major factor in determining the life insurance risk, such information is given on the application for insurance. It is often possible, therefore, to calculate the cancer mortality among insured persons by industry or occupation. However, occupation is usually available only to the insurance company at time of application for insurance or at time of death, intermediate occupations ordinarily being unavailable.

The records for group life insurance (that is, insurance issued to groups of employees generally with the cooperation of and contributions from the employer) have been used to calculate cancer death rates for all employees actively at work in particular industries. It should be noted that the cancer death rates for all employees actively at work in an industry so covered may not be significantly higher than average. Yet there may be some processes in that industry in which relatively small numbers of men are employed and which are associated with very high cancer death rates. However, it is frequently possible to determine cancer death rates for individual plants, and, if these plants concentrate on specific processes, the cancer death rate associated with such processes can be derived. A study covering the period 1927-1934[17] indicated significantly higher than average mortality among felt hat makers, tube, rod, and pipe mill employees, paper manufacture employees, hotel and restaurant workers, shoe and light leather goods producers, and employees of electric and street railways.

In recent years a number of corporations have become interested in the mortality from cancer of specific sites among their employees, and such studies have been made in various industries or plants from group life insurance records. The customary procedure has been for the employer to approach the insurance company and request that a study be made. Inasmuch as the relationship between the holder of a group life insurance contract and a life insurance company is confidential, a life insurance company is not free to publish the results for individual concerns. However, investigations made on an industry-wide basis are not subject to this restriction. At the present time, about 36 million persons are insured under group life insurance policies, and these include most of the employees of the larger companies in the major industries.

Industrial Insurance.—The records for industrial insurance (that is, insurance issued to individuals in small amounts on which premiums are payable weekly or monthly, usually collected at the home of the insured) can be used to compile cancer death rates according to the occupation of the insured at the time his policy was issued. It is usually also possible to ascertain the occupation of the policyholder at the time of his death. A large proportion of the adult males so insured are employed in industry. About 20 million adult males are currently insured under industrial policies, and these include, chiefly, the lower paid urban wage-earners.

From several studies made in the Metropolitan Life Insurance Company (based on the occupation at death), it would appear that the following occupations have been associated with higher-than-average death rates from lung cancer: coppersmiths and tinsmiths, painters and varnishers, and roofers and slaters. Less definite, but suggestive, have been the findings for such occupations as machinists and mechanics, railway enginemen and trainmen, proprietors and bartenders of drinking establishments, brick and stone masons, plumbers, steamfitters and gas fitters, and tailors and other clothing workers.

Special medicoactuarial records maintained by most of the larger life insurance companies on ordinary life insurance (that is, insurance issued to individuals in amounts of $1,000 or more) lend themselves most readily to the computation of cancer death rates according to occupation of the insured at the time the policy was issued. However, the last intercompany study of mortality among persons with ordinary life insurance according to occupation was made in 1937. This and earlier investigations indicated that cancer mortality was high among waiters and cooks, hotel keepers, guards, watchmen and janitors, painters and brick and stone masons, and tailors and clothing operatives. When studies of this kind are undertaken in the future, they will probably be made under the aegis of the Committee on Mortality under Ordinary Insurance and Annuities of the Society of Actuaries. About 60 million persons are currently insured under ordinary policies, comprising mostly middle-class males in nonhazardous occupations.

It is important to bear in mind that the records maintained by life insurance companies can merely indicate the fact that cancer mortality has been high in certain occupations. It does not by any means follow that such cancers are occupational in origin. Additional investigations must be made to determine whether the association is causal.

The records of accident and health insurance companies on operations and treatments for cancer provide another starting point for investigations of cancer mortality. However, in such instances an elaborate and costly machinery would be necessary to obtain a reasonably complete follow-up. Such a follow-up is automatically obtained where a person carries life insurance. The disability claim records of life insurance companies can be used as a means of determining the survival and recovery rates among persons insured under ordinary life insurance policies who submit disability claims on account of cancer. Such disability claim records usually contain more detailed information as to the site and type of cancer than do claim records. Furthermore, persons insured under ordinary life insurance policies who submit disability claims on account of cancer can, as a rule, be traced after recovery to determine the rate of recurrence of cancer.

The records of periodic health examinations of life insurance company employees have a potential value for the investigation of the natural development of cancer in its preclinical stages, even though employment by a life insurance company does not carry any known occupational cancer hazard.

Industrial Records

The use of public health and insurance company statistics in the study of occupational cancer can at best only indicate areas in which detailed studies should be undertaken. These must be undertaken within the industry itself and require the careful cooperation of several different groups. Since exposure within industry is far more likely to be greater than outside of industry, it is probable that studies conducted in the primary producers of a chemical will be more productive than studies of secondary users. Such investigations are difficult and time-consuming to conduct, and unless planning for them is undertaken in advance, they may be impossible to complete.

The reason for the lack of such planning in the past is found in the history of industrial medicine. At the turn of the century, industrial medicine was primarily concerned with the treatment of accidental injuries. This state of affairs still exists in many industrial plants, although the more progressive industrial physician is increasingly recognizing the importance of preventive and constructive health measures. Intensive safety campaigns and much safety engineering have reduced industrial accidents to the point approaching the infinitesimal. Thus, only 3% or less of absenteeism in industry is due to in-plant accidents. The increasing importance of preventive-constructive measures in industrial medicine is attested by the recent recognition granted occupational medicine as a section of the American Board of Preventive Medicine.

Suspicion for the existence of an occupational cancer may also arise from the clinical judgment of the physician. Many medical advances have arisen out of the "clinical hunches" of well-trained and observant physicians. It is necessary only to point out that the clinical hunch can do no more than arouse suspicion; it neither proves nor disproves the existence of occupational cancer. However, when the clinical hunch serves as the basis of careful, detailed study, it may lead to significant advances in our knowledge. Such clinical hunches may arise out of a physician's being impressed by the number of cases he sees in a relatively restricted group, by corollary clinical findings in individual cases, or even by inquiries from the workers themselves, the answers to which he may not know but yet feel obligated to develop. The increasing potential significance of occupational cancer arising from the increased quantity and diversification of chemicals used in or made by industry places an increasing responsibility on the industrial physician, full or part-time.

When a suspicion has arisen, from studies of public health or insurance statistics as outlined above, by clinical judgment, or from an unusual location of a cancer, such as scrotum or bladder, that an occupational cancer may exist in a given industry, subsequent studies follow a pattern which it may be helpful to outline. The first step is to obtain all of the cancer cases of that industry for a period of time (perhaps 5 or 10 years) and to analyze them for over-all incidence in the industry. It is recognized immediately that the first requisite is that some system of cancer reporting within the industry is necessary. Let us assume, for example, that in a given industry 50 cases of cancer have been reported over the past 10 years. If this occurred in an industry in which there was an average annual employee census of 200, this would represent an incidence of 2,500 cases per 100,000 per year, which would be distinctly abnormal. If this incidence happened in only one year, it could well be a statistical artifact; hence, it is important to have the study encompass more than one year. On the other hand, if this occurred in an industry in which the average annual census was 2,000, this would represent an incidence of 250 per 100,000 per year, which would be just about the anticipated rate. If it happened in an industry with an average annual census of 20,000, this would represent an incidence of 25 per 100,000 per year. Such a result would clearly be so much below the expected that it should be immediately evident that only about 10% of the cases are actually being reported with the system used. Such a result should lead to a critical evaluation of the effectiveness of the reporting system. More detailed studies would be futile in this stage unless the cancer being studied is of an unusual site, such as the scrotum or bladder.

Let us assume, however, that an incidence of 250 per 100,000 per year has been determined. The next step would be to analyze the cases by sex. Thus, if it were found that 40 of the 50 cases occurred in men and that about 80% of the employees were male and 20% were female, the incidence rates of the sexes would be approximately the same. On the other hand, if 40 of the 50 cases occurred in men in an industry in which only 20% of the population were men, it would certainly be suggestive of two situations: first, that the incidence in men was suggestively high (i. e., 1,000 per 100,000 per year) and second, that the incidence in women inordinately low (i. e., 60 per 100,000 per year). Both situations would warrant further study in an attempt to understand the causes.

The next step in the procedure would be to pull out the medical record of each of the 50 cases reported and study it in great detail. The importance of an adequate medical record, containing a maximum of information and documented by originals or copies of laboratory reports, x-ray reports, biopsy reports, summaries of hospitalizations, autopsy records, and death certificates (when death has been the result), now becomes apparent. In looking to the future, every physician, and particularly every industrial physician, can understand the importance of the maintenance of adequate industrial medical records. It is apparent that if the industrial medical record is inadequate the promise of rewarding results from the detailed study of them is indeed remote.

However, after the medical records have been found adequate, detailed studies of them will now permit the proper classification of cases. For instance, such studies may reveal that cases reported as lung or liver cancer are, in reality, metastases of cancers of different primary sites. They should, therefore, be reclassified as to the primary site of origin. In addition, it may be found that certain conditions initially believed to be cancer and reported as such have been found on detailed study to be some disease other than cancer. The initial report on such cases may never have been changed and the cases carried erroneously as cancer cases. Such detailed study, therefore, may lead not only to an alteration of the total cases reported but also to changes in the distribution of cancer cases in organ systems.

This detailed study of the medical record also permits all cases to be classified by age at apparent onset of the disease. This study may be rewarding because if it is found that the average age at onset of cancer, either in general or in site-specific situations, is significantly lower than in the general population this itself may be justification for pursuing the studies further.

The next step in the procedure is to obtain an occupational history on the individuals with cancer. This is not an easy task, since the individual himself, if still living, may not remember all of the various occupations he has been involved in, even within one industry. At this point, the personnel and/or payroll office may be of great assistance to the investigator. Because it is necessary for industry to know the cost of its finished goods, cost accounting records are usually maintained. Since different jobs may demand different rates of pay, it is frequently possible by reviewing such records to follow a man's career within an industry in quite specific detail, at least as far as different departments and the major classifications within each of these departments are concerned. A study of such occupational records may then provide a further clue for the continuation of these studies. Thus, if an inordinate number of cancers appear among one group of workers or if cancers of a specific site all occur in men with a long service in one department, further detailed studies again may be warranted.

At this stage, the numerator of the incidence equation is available, but the denominator is not. This equation is as follows: Incidence (cases per 100,000 per year) = total number of cases for n years ÷ population at risk × n × 100,000. Let us assume that, at this point, examination of the records shows that there are 10 cases of lung cancer among gadget wreckers. Further review of the records discloses that among these 10 persons the minimum service as a gadget wrecker is nine years. Two more men have had 10 years of such service, one 11, two 13, one 15, one 18, one 23, and one 25 years. It would then be extremely helpful to the physician if he were able to obtain from the personnel department the number of men who have worked nine years or longer as a gadget wrecker. This figure would supply him with the denominator in the above equation. Thus, if our study encompasses 10 years, ending Dec. 31, 1955, and 100 men have worked nine years or more as a gadget wrecker by that date, the equation becomes as follows: Incidence = 10÷100×10×100,000=1,000 per 100,000 per year. This incidence of lung cancer is some 30 times the expected incidence in men of all ages and about 14 times the expected incidence in men over 45 years of age.

It might appear that the study is now complete, but actually it should proceed further. The next step would be to obtain from the personnel department the names of all men who have ever, regardless of the duration of such work, worked as a gadget wrecker. Then the medical records of each of these men should be reviewed in order to insure that no cases of cancer have been overlooked. Experience in occupational cancer studies has shown that this review may frequently uncover proved cancer cases among these medical records, which, for one reason or another, may have escaped reporting. It is conceivable that such studies will reveal cases with an exposure time which is less than the previous minimum uncovered in the reported cases and, hence, may require revision of the population at risk. This type of analysis of medical records will insure that no cases have been missed. The collection of data on total employment in the department will permit analysis of cancer data in a variety of ways, most of which will give negative results which only serve to establish more firmly the significance of the positive results in the more selected groups. Thus, analysis of incidence rates for all men employed one day or longer, 5 years or longer, 9 years or longer, and 15 years or longer may show no statistically significant increased incidence until employment has exceeded 9 years, and an increasingly significant increase the more employment has extended beyond 9 years. It is obvious from what has been said that when the incidence rates have been determined they should be analyzed for statistical significance in comparison with the expected rates in the general population. This analysis should generally be performed by someone well acquainted with statistics as applied to biological problems. This is important because a four-fold or five-fold increase in incidence, which may appear on the surface to be significant, may really not have any significance statistically because of the small number of cases.

In addition, consideration should be given to the possibility that a difference in the characteristics of the industrial population and the general population with which it is compared may account for the observed difference in incidence. The incidence of cancer of specific sites is known to vary by age, sex, race, and geographical region, so that the possible effect of these factors should be investigated in the interpretation of differences in incidence rates.

Finally, when these rates have been determined, one last step may be worthwhile. This is to go to the foreman of the operation involved and inquire about the existence of shift books. A careful study of such shift books may reveal a pattern of occupation by subdivisions in the department which cannot be determined from the records maintained by the personnel and/or payroll office. It may be found that, although 100 men work in a department, perhaps only one-half or one-quarter of them are involved in one particular operation of the department and that all of the specific cancer cases are to be found among those men performing this specific operation. This final study may be of great importance from two standpoints: first, it may increase the significance of the incidence rates, and second, it may serve to pinpoint the exposures and, hence, lead to the easier detection of the carcinogenic agent and, thus, to its ultimate control.

It is necessary to point out that, in small industries with a heavy labor turnover and also in certain industries with problems peculiar to the industry, such as the construction industry, industrial medical records may be quite incomplete or even lacking. In such cases, obviously, the above techniques cannot be applied. Other methods, such as the use of social security records or high-caliber union medical services, may need to be developed for statistical, epidemiological studies of this nature. In these cases, again, the first requisite will be the collection and periodic analysis of adequate medical records.

From what has been said above, it can be seen that occupational cancer studies even within an industry can be laborious, time-consuming procedures. There are no real shortcuts to such adequate studies, and attempts to perform "quickie" or ill-conceived studies may lead to very misleading results. Adequate studies require the services of a physician who is interested in such studies and trained well enough to determine the adequacy of medical records. He must also have enough familiarity with the industry being studied in order that occupational histories will have some meaning to him. He must, in the course of such studies, enlist the support of the personnel and/or payroll departments, a competent biostatistician, the foreman, and other groups within the industry, including, particularly, engineers and chemists who are familiar with the operations being studied. Finally, he needs, for comparative purposes, age, sex, and site-specific incidence rates for the general population and for segments of the population more comparable to those he is studying, if his group differs in any significant way from the general population.

The above comments outline certain requirements for the future which will greatly assist in the performance of occupational cancer studies. First, and most important, are adequate industrial medical records. Second is a mechanism of recording and reporting disease which is capable of periodic analysis. This suggests McBee sort cards and IBM or other mechanical methods of analyzing data. Third is a mechanism of recording occupations and the occupational exposures of various segments of the working force. These occupational data must be capable of mechanical analysis so that a periodic running survey of occupational exposures, including their length, may be correlated with the medical data. If industry and industrial physicians become cognizant of the demands which will be made of them in the future and plan at this time for the recording of data so that they can be analyzed, it will be possible for them to become aware of any significant shifts in the incidence of disease, including occupational cancer, in the working force. The earlier such shifts are recognized, the sooner can their causes be studied and understood. This in turn will lead to the control of significant exposures and the genuine fruition of industrial medicine, whose confines lie within the preventive–constructive framework of medicine. These comments, although true of occupational cancer, are equally valid for all occupational disease. The methodology can be applied equally successfully by the industrial physician, the private physician, the public health physician, and the union physician, but, because of the need for assistance from other groups within industry, it will probably be most successfully applied by the industrial physician. It will become important for industry to know that its engineering controls are keeping pace with its technological developments, and this can most effectively be done through studies comparable to those outlined above.

Summary

In the majority of cases, occupational cancer cannot be distinguished, morphologically, from cancer not due to occupation. As a result, the diagnosis of occupational cancer is more difficult than the diagnosis of many other occupational diseases.

The suspicion for the existence of an occupational cancer hazard may arise from clinical observations, from public health statistics, or from the statistics available from insurance companies. The value and limitations of each of these must be realized. Failure to realize the limitations of these methods may lead to misleading conclusions. Failure to appreciate their value may result in overlooking important leads for further detailed studies.

In modern industry, with the tremendous expansion in the manufacture and use of chemicals, some of which may be carcinogenic, the responsibilities of the medical profession for detecting new occupational cancers have been increased. The first requisite in such studies is the maintenance of adequate medical records by competently trained physicians. In addition, it will be necessary to maintain adequate employment and occupational records. The correlation of cancer with occupation must be made from these records with a full appreciation of the natural history of nonoccupational cancer, such as its age, sex, and site distribution.

Specific increases in age, sex, and site-specific cancer incidence above normal incidences for the same age, sex, and site represent the only reliable

evidence for the existence of an occupational cancer hazard. The importance of normal incidence rates in the general population, to serve as a baseline control, is therefore self-evident. Further, a careful methodology for occupational cancer studies from industrial medical and occupational records is required.

The important aspect of occupational cancer studies lies in the fact that an understanding of the disease will permit its control and, ultimately, its complete prevention. With modern engineering methods and control and protective devices, prevention can be achieved at reasonable cost.

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BLOOD SUGAR DETERMINATIONS.—Blood sugar in the majority of clinical laboratories is determined by obsolete analytical methods which yield false values. Instead of the actual glucose content of the blood, these values represent glucose equivalents of the combined copper reducing power of glucose plus other substances—such as glutathione, ergothioneine, uric acid, amino acids—which are entirely unrelated to blood sugar. The reducing power of these substances varies with the several reagents employed, so that the sugar values are distorted to variable degrees. Thus the non-sugar reducing matter adds to the actual sugar content 10-15 mg. percent in the Hagedorn-Jensen method, 15-25 mg. per cent in the original Folin-Wu method 25-35 mg. per cent by the old Shaffer-Hartmen method. In consequence, different laboratories report for the same sugar concentrations a variety of figures which allow no basis for comparison. This situation has been, and still is, the source of much confusion and misunderstandings. For 28 years now we have been using methods which give the true, correct sugar values. Since these are at least as simple as the methods which yield false values, there is no justification whatever for the inertia that keeps false values in circulation.—Michael Somogyi, Ph.D., Sugar Tolerance Tests: Their Relation to Diabetes and the Nature of Diabetes, Proceedings of the Forty-fifth Annual Meeting of the Medical Section of the American Life Convention in New York, 1957.

MEDICINE AT WORK

AT LAST—A HOSPITAL TO FIT DOCTOR-PATIENT NEEDS

Milton Golin

In Hartford, Conn., last month a middle-aged insurance executive checked into a hospital for an appendectomy. His doctor did a fine job and so did the hospital, which provided adequate nursing service, up-to-date facilities in the operating room and beside his bed, and prompt attention to his other needs. At the end of seven and a half days the patient paid a hospital bill of $229.20 and went home.

Good hospital care? The doctor had no specific complaint and neither did the patient—except perhaps to wonder how hospital costs have gone up in recent years. The fact of the matter is that for most of those seven and a half days the insurance man was exposed to care that was too good. He was paying for a great deal of institutional equipment and services that need not have been kept in readiness for him.

These included bedside oxygen and suction equipment which might have benefited a victim of a heart attack—but not him; a special bed with tucked-away pulley devices which would have helped a patient suffering from multiple fractures—but not him; and the continual availability of expert nursing surveillance which might have been a godsend to a patient with asthma—but not to him, at least not after the first day or two.

As things stand now in a large number of the 7,000 hospitals in the United States, almost every patient, no matter what his condition (except, perhaps, those in obstetric and pediatric units), has closely available to him the same equipment, the same facilities, and the same services as the next patient—and he has it throughout his hospital convalescence. Whether he underwent a critical operation yesterday or is sprucing up for departure in an hour, all the complex forces of the hospital are poised near at hand for his immediate service. Of course, if he is that asthma sufferer beginning to gasp for air, he may wonder how long it will take to summon a nurse from among those busy with patients who make relatively trivial demands.

How can this part-time waste of physical plant, specialized equipment, and expensively trained medical talent be reduced in order to give patients better hospital care for their money?

Pretty much the same question of cost and quality troubled Dr. Lowell T. Coggeshall in the spring of 1956 when he was appointed special assistant to the Secretary of Health, Education, and Welfare. Dr. Coggeshall (now dean of the University of Chicago's division of biological sciences) decided to launch a committee study to find some answers. The first launching brought much viewing with alarm and wringing of hands—but no accumulation of pertinent data which might lead to a solution.

Then Dr. Edward T. Thompson, already alerted to the problem, began putting some twos and twos together, in his recollection of the experiences of a few hospitals, and getting some interesting fours. This led to more memory-jogging and more study of some seemingly unorthodox but effective practices at several other hospitals.

As chief of intramural research activity for HEW's division of hospital and medical facilities, Dr. Thompson was in a position to direct his own Public Health Service study of the problem, rather than farm out the research with federal grants. Little by little he began uncovering evidence of a new trend in hospital care developing in the United States. He knew that, like a jigsaw puzzle, these pieces of evidence merely needed gathering and putting together to produce a full-dimensioned picture of what was happening.

How It Started

Dr. Thompson believes that the trend began developing shortly after World War II, when an increase in the number of major surgery cases led more and more hospitals to establish postanesthesia recovery rooms, where unconscious patients could be placed under intense and continual surveillance. (Of course many hospitals for years have had special units for the care of premature infants.)

"Soon," said Dr. Thompson, "internists and other physicians saw great benefits in these specialized facilities. They, too, arranged for intensive services to tide over patients stricken with critical heart, pulmonary and other conditions. At first, the hospitals restricted confinement of patients to only five or six specified hours of the day, usually the afternoon. When doctors expressed the need for evening use, too, a number of hospitals made intensive care facilities available around the clock on a short-term basis."

Thus began what is now being recognized by more and more physicians as "Progressive Patient Care"—the systematic classification of patients according to their medical needs. Dr. Thompson found only sketchy references to this system in hospital journals and other professional literature. It was largely a matter of poor communications—a hospital administrator in, say, Montana, not knowing about a hospital in Kentucky where patients were getting more effective service through an intensive care unit.

In February of 1957 Dr. Thompson decided to survey the extent of this trend. He located 20 hospitals which had intensive care units. He found others which lacked these units but did have special provision for patients to care for themselves during diagnostic examination, dietary regulation, daily physical therapy, and other treatment requiring minimum service of highly trained nurses.

In April of last year Dr. Thompson learned that Mr. Edward J. Thoms, administrator of the 180-bed Manchester Memorial Hospital in Manchester, Conn., was putting into action a bold plan which combined both these extremes of care into a three-phase program—gradually placing the patient in transition from special surveillance to self-help. (Or, the mobility might work in reverse—from, say, a diagnostic examination in the self-help unit, to surgery and the intense care unit, and then back to self-service by way of an intermediate care unit.) These divisions were representing broad areas of patient care—yet shading into one another to form a continuum of care based on medical need as determined solely by the patient's doctor.

Before long, Progressive Patient Care at Manchester was providing a higher level of service in a shorter period of time. Last July, encouraged by preliminary results, the Public Health Service decided to finance a detailed and continuing study of the Manchester experiment by a team of experts. There were to be no recommendations—just close scrutiny of the system in operation.

Meanwhile, the concept of Progressive Patient Care, abbreviated in medical circles to "PPC," was fast becoming known in scattered parts of the nation. By February of this year a tally of the number of hospitals handling patients in stages similar to the Manchester plan came to 30—a rise of 50% in a year. Last week the Public Health Service found nearly 150 hospitals in that degree of development.

"This whole idea is spreading rapidly," Dr. Thompson said last week in his Washington office. "Its ramifications are breath-taking. Many hospital administrators and practicing physicians see PPC as much more than a system of improved care. If it is accepted along proper guide lines by the hospitals of our country, a lot of other things could change for the better."

Changes Possible

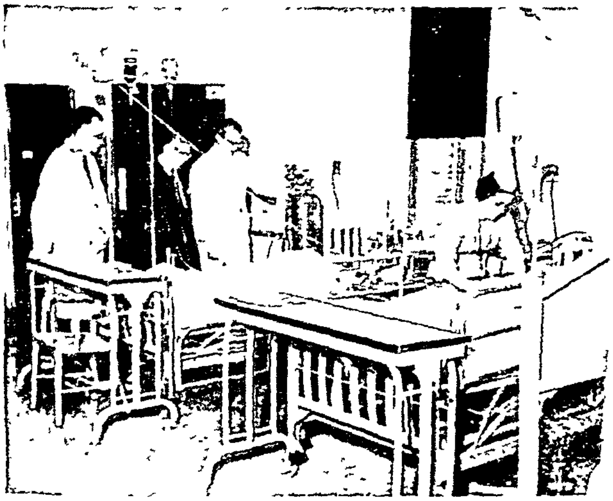
These are some of the wide-ranging beneficial changes he sees in the realm of possibility:

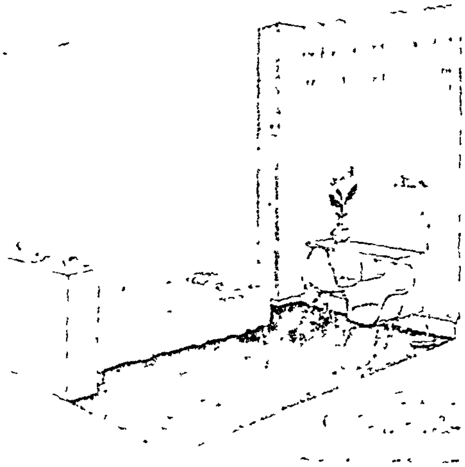
—Because only the doctor would decide when his patients were ready for transfer from one zoned unit to another, he would be brought into more intimate contact with the hospital than he is under most existing conditions.

—Installation of expensive equipment in only one section of the hospital, the intensive care unit, would bring about substantial reduction in over-all construction and operating costs. Design and architecture of the buildings also would be changed greatly.

—In turn, this prospect of accumulated savings might very well bring costs within the means of communities which now—in the midst of recession—are struggling with the problem of financing new hospitals or enlarging existing ones.

—Concentration of the most thoroughly trained nurses and ancillary medical personnel in the in-





Physicians stand by at an intensive care unit similar to the one under close study by a Public Health Service team. Scene at left is in Philadelphia General Hospital. At right is artist's conception of hotel room atmosphere of a self-service unit in Manchester (Conn.) Memorial Hospital, where the PHS study is centered.

tensive care units would allow more effective use of their skills. This is particularly important at a time of severe shortages in these fields.

—With more effective care, concepts of medical economics regarding so many hospital beds per so many thousands of population would be adjusted to more meaningful levels.

—Placing the patient in zones of medical need also would indicate the need for a new approach to prepayment hospital plans in which zoning costs might be covered—rather than through the present per diem subsidy according to socioeconomic standards by type of accommodation. In other words, policy holders might have the option of paying premiums for all three zones of hospital care, two zones, or one—with uncovered costs being paid out of pocket as a sort of deductible feature.

"And at last," Dr. Thompson adds, "there is the potential here for truly comprehensive internship and residency training to cover the combined experience of varied intensive care conditions in a single section of the hospital. Such an arrangement might expand or supplement the present systems of straight or rotating internship training in segregated medical, surgical, orthopedic, obstetric, and pediatric wards.

"Of course these possibilities for progress represent great changes—changes which may be difficult to assess in the light of many decades of familiar hospital practices. Yet, over a period of time, they definitely could become realities from widespread acceptance of progressive patient care as the best kind of care."

Dr. Thompson is not alone in his optimism. Last December, shortly before details of the PPC plan were related to a House appropriations subcommittee, Dr. Leroy E. Burney, surgeon general of the Public Health Service, announced: "We hope this study at Manchester Memorial Hospital will lead to greatly improved patterns of hospital care at less expense to patients."

The House subcommittee at that time also was told of the possibility of adding two more stages to PPC—an adjoining hospital unit for long-term care patients, and a home-care program to smooth a patient's transition from a self-help unit. On this point, Dr. Burney said, "Tens of thousands of older persons have been kept in general hospitals for prolonged periods beyond the time they need or even can benefit from 'full-dress' services."

A. M. A. Participation

In February, as the study at Manchester Memorial Hospital was gathering steam, Dr. Thompson and members of the project team met with officials of the American Medical Association to report progress and preliminary findings. A. M. A. interest in PPC stems from the medical profession's continuing search for better total care for the patient.

In seeking the services of a medical advisory committee for the Manchester study, Dr. Thompson has had the help of (among other advisors) the A. M. A. Council on Medical Education and Hospitals and Council on Medical Service, the American Hospital Association, and the Joint Commission for the Accreditation of Hospitals.

Dr. Thompson reports that so far more than 5,300 hospitals have replied to a survey on intensive care and self-help units. Analysis of these returns is now being completed. Meanwhile, all 13 members of the project team at Manchester are completing their own evaluations of patient recovery there, acceptance of the new system, utilization of medical and nursing personnel, and costs to both patients and the hospital.

Late next month the combined findings will be presented to the surgeon general in the form of an initial report, "A One-Year Study at Manchester," along with a matrix of problems that require further investigation. The next step, says Dr. Thompson, will be publication of a guide for use by hospitals throughout the country, describing key problems in setting up Progressive Patient Care units, and including drawings of schematic models of the different types of units.

Already there is some solid evidence from Manchester that patients are not only getting better care under PPC but are experiencing a briefer hospital stay at less cost to them and to the hospital. According to comparative figures there, the middle-aged insurance executive cited earlier as the appendectomy patient in a nearby Hartford, Conn., hospital would probably have been released from Manchester Memorial in six and a half days (instead of seven and a half in Hartford) and would have paid a bill of $183.88 (a saving of $45.32). The same comparative data show that the Manchester hospital, under its PPC system, can figure an inventory of no more than $337 per bed, compared to an average inventory cost of $353 per bed in Connecticut hospitals offering a conventional single-phase system of patient care.

Varying Room Rates

One reason for the saving to patients is varying room rates. The scale at Manchester Memorial Hospital for accommodation in an intensive care unit (with continual nursing surveillance of four beds) is $22 a day. The rate drops to $16 when the patient is moved to an intermediate care unit, and to $8 a day in a self-service unit—where service by registered nurses is at a minimum, the patient is able to care for his own toilet, and he goes to the hospital cafeteria for his meals.

"While individual costs may be less under PPC," says Dr. Thompson, "this of course is not the system's most significant feature. The really big advantage lies in much better care for the patient's hospital dollar."

While Dr. Thompson oversees the Manchester study from his Washington office, the field project in Connecticut is being led by Dr. Faye G. Abdellah, who is on detail from the division of nursing resources of the Public Health Service. Others on the 13-member team include a biostatistician, physicians, nurses, a cost analyst, a dietitian, an architect, an equipment analyst, an operations research specialist, a medical records librarian (Mrs. Adaline C. Hayden of the A. M. A.), and a social scientist and psychologist (who gauge the system's acceptance by patients, their families, and the Manchester community).

The work of this group might very well set off a chain reaction of improved hospital care—benefiting the more than one million patients who are in the hospitals of our nation every day of the year. To what degree PPC will influence planning for new hospitals and for the expansion of existing ones is impossible to gauge at this time. For all its promise, for all its status as a leading exponent in a decidely growing trend, PPC at Manchester still is not really too far beyond the experimental stage. Even under the best guide lines, acceptance of any radical concept—no matter how much improvement it indicates—can be a painful process.

Yet, in this period combining great cost-consciousness with great health-consciousness, even the preliminary evidence of PPC's established success in Manchester might provide impetus for the hospital expansion which our nation so sorely needs.

For example, two months ago—well before favorable results of the Manchester project were made known—the Hospital Planning Council for Metropolitan Chicago was created with the objective of meeting hospital needs more economically and efficiently than in the past. This already is being done at Manchester. The Council announced it would try to solve the problem of how "duplication of expensive resources can be minimized and how old hospitals can be adapted for future use." This also is being done at Manchester.

Other objectives of the Chicago council are to care for the sick "in accordance with the measured needs for these services" and to "provide a means whereby the interests of the hospitals and the medical profession may be more closely correlated." The fact that PPC is meeting these objectives, too, along with the others, is really no coincidence. Chicago's search for solution of its hospital problem is typical of the plight of scores of communities throughout the United States. It just happens that the broad problem is being crystallized for possible solution in Manchester.

In gauging whether the study at Manchester will set a national pattern, it is too early to suppose that probability will overtake possibility. But it is not too early to predict that the experience there, after being relayed as an official report to the Public Health Service in a few weeks, will evoke serious consideration of the organization and re-alignment of function of the 7,000 hospitals in the United States.

ANTIBIOTIC-RESISTANT STAPHYLOCOCCI.—Although hardly comparable with respect to numbers of organisms killed and the speed of killing, erythromycin and chloramphenicol in combined large dosage have proved to be an effective combination to control growth of penicillin-resistant organisms. These two, with perhaps bacitracin for a few days, have proved to be as effective a combination in therapy of human infections as has been described. . . . It has been our impression, both in vitro and in vivo, that staphylococci whose resistance to penicillin is greater than 0.15 u/ml. produce penicillinase and are for practical purposes, penicillin-resistant. Penicillin in clinical therapy is useless in infections caused by those strains of staphylococci. Similarly, other single-drug therapy has resulted in increasing numbers of strains of staphylococci resistant to multiple other agents. In such circumstances the agent is of no clinical value either. Irrespective of the importance of the epidemiologic aspects of penicillin-resistant staphylococci, it cannot be concluded that the infection hits only old persons in the hospital whose admission was necessitated by some other debilitating, noninfectious disease. . . . They do, however, probably occur more often in patients receiving antibiotics for some nonspecific "prophylactic" reasons than in patients not so "protected." To date, no agent or combination of them is as efficacious as pencillin was in the era when the majority of isolated strains were sensitive to it.—Paul Bunn, M.D., Aldona Baltch, M.D., Winifred Osborne, B.S., and Leonard Canarili, B.S., Staphylococci: On the Obiquitous Nature of Human Infections and Their Control by Antimicrobial Agents, Singly or in Combination, *Annals of Internal Medicine,* January, 1958.

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WHY DO FEMALES LIVE LONGER?

IT IS difficult to explain sex differences in mortality and longevity. These differences are being widely publicized as expectation of life at birth in the United States approaches three score years and ten. Moreover, the United States population census of 1950 was the first one to reveal more females than males—a surplus now approaching 2 million. This surplus of women is more pronounced among the higher age groups. In fact, some demographers point to the prospect of "a nation of old ladies." Lower mortality among females increasingly offsets and counterbalances the excess of male births.

Expectation of life at birth is about 73 years for white females and only 67 years for white males; in 1940 the excess for females was only four years. Expectation of life at birth is a severely qualified forecast. Currently, 1,000 white girl babies born during the year would be expected to live a total of 73,000 years if their mortality during each successive year of life were the same as now prevails. Few demographers would care to predict that age-specific mortality rates will remain unchanged, even in the 21st century, until all of these 1,000 babies have died. Likewise, the statement that 1,000 white male babies can be expected to live a total of 67,000 years, or an average of 67 years, is based upon the continuation of current age-specific mortality rates during their entire lifetime.

Whether this sex differential in longevity increases or decreases or will be greater or smaller in 1975 than it was in 1950 is a matter for speculation. Explanations of the current difference of six years are far from complete. Natural scientists are forever reminding us that the female outlives the male in most species of the animal kingdom where the question of longevity has been carefully studied. Longer life of women has been attributed to lesser pressures of living. Whereas a man has to work under greater strains in a highly complex civilization, women are aided in the release from household duties by all manner of appliances. The mortality risks of childbearing are very minor today, as attested by the precipitous decline in maternal mortality rates. Women can devote more of their time to leisurely living, especially as their children grow older.

Two sociologists, Professor Vance and Father Madigan,[1] call this social explanation of sex mortality differentials sex differences in the "style of life." They tested this by comparing the mortality of American Catholic religious brothers and sisters, who face somewhat similar occupational hazards, do not have families, and in general are subject to somewhat similar pressures of living; that is, the differences between the sexes in the "style of life" were considered minor. These two investigators reasoned that, if they found no sex differentials in mortality in this control group, the sex variations in the "style of life" could largely explain the lower mortality enjoyed by females generally in the United States. But the nuns (sisters) had lower mortality and lived longer than their male counterparts (brothers)! Expectation of life at birth in this control group was four years, or 10%, greater for the females than for the males. Since this excess of 10% in length of life for females was matched by a similar difference of 10% in favor of white females generally in the United States, the investigators concluded that "style of life" was not an explanation of lower mortality or longer life among females. Apparently the scientific explanations for longer life among females must be biological rather than social.

MENTAL HEALTH WEEK

The 10th annual observance of mental health week will be held this year from April 27 to May 4. The co-sponsors are the National Association for Mental Health and the National Institute of Mental Health. The theme for the 1958 observance is, "With Your Help, the Mentally Ill Can Come Back." Emphasis is being placed in four major areas: (1) improved care and treatment for patients in mental hospitals; (2) expanded services for the early detection and treatment of mental and emotional illness; (3) more adequate rehabilitation services for the improved or recovered mental patient; and (4) expanded research into the causes, prevention, and treatment of mental illness.

Some gains have been made during the past few years. New methods of treatment, including the use of new drugs, are restoring more mentally ill patients to health. The stigma surrounding mental illness has been reduced. Additional research is getting underway, although for each patient being treated for mental illness we are still spending less than $4 per year on research to find new ways of prevention, treatment, and rehabilitation. Communities are providing more facilities for diagnosis and treatment of the mentally ill.

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[1] Vance, R. B., and Madigan, F. C.: Differential Mortality and "Style of Life" of Men and Women: Research Design, Trends and Differentials in Mortality, New York, Milbank Memorial Fund, 1955, pp. 150-163; Differential Sex Mortality: A Research Design, Social Forces **35**:193-199 (March) 1957. Madigan, F. C.: Are Sex Mortality Differentials Biologically Caused? Milbank Memorial Fund Quarterly **35**:202-223 (April) 1957.

These and other gains are small in comparison to the unmet needs of the mentally ill. Mental illness remains the number one health problem of the nation. Over one-half of all the hospital beds in the United States are occupied by persons suffering from mental illness or disability. In addition to the more than 750,000 persons hospitalized because of mental disorders it is estimated that 16 million persons suffer from some form of mental or emotional disorder and are in need of psychiatric care.

Most of the hospitalized mentally ill are cared for in the state hospitals of the nation. These hospitals are for the most part overcrowded and understaffed to such an extent that many thousands of patients are doomed to chronic and often hopeless *invalidism.*

The average per diem cost per patient in the state hospitals of the United States for 1956 was $3.27. In 1957 this had increased to $3.64. The state with the lowest per diem cost per patient spent $1.85, the state with the highest spent $5.47. The District of Columbia spent $5.75, while the cost per patient per day in Veterans Administration neuropsychiatric hospitals was $10.31.

The average expenditure of $3.64 per day per patient in the state hospitals and the substandard care given constitute a national disgrace. The physicians of the nation need to be made aware of the enormity of the problem and stimulated to assume their responsibility to see to it that the patients in these hospitals receive the type of treatment and care to which they are entitled. Physicians not only have the responsibility to do this but are in a unique position to provide effective leadership to an increasing number of citizens and citizen organizations that are becoming aware of the problems and are mobilizing for corrective action.

A more hopeful aspect of the mental illness problem is the increasing interest of physicians and hospital administrators in providing psychiatric services as part of the general hospital care program, as well as maintaining private mental hospitals. In 1956 there were 209 private hospitals and 393 psychiatric services in general hospitals in the United States. As these facilities are increased more patients will be given prompt and intensive therapy and for most of whom the prognosis will be early restoration to mental health.

The American Medical Association played a vital role in the establishment of the Joint Commission on Mental Illness and Health and is continuing to assist in its work. It is hoped that this commission will soon make available to all legislative bodies and other interested groups outlines of those patterns of patient care most likely to restore the mentally ill to good health. Even more important, this commission may discover new principles of mental health and formulate them with those already known, to the end that the incidence of mental illness can be significantly reduced.

An opportunity for great service is presented to all physicians to help in the observance of mental health week.

NEW ERA IN HOSPITAL CARE?

Since April of 1957 the Manchester (Conn.) Memorial Hospital has been serving patients and physicians in an entirely new approach to institutional therapy, called Progressive Patient Care. It is a comprehensive system designed to adapt hospital facilities to the patient, rather than the other way around. As a Medicine at Work article points out on page 2180, the Manchester concept of care (refined, actually, from the experiences of a number of other hospitals) may foreshadow new thinking, new planning, and new policies in many of the 7,000 hospitals of the United States. Events at Manchester seem to impinge upon nonmedical as well as medical phases of the vast hospital field whose physical assets are estimated at 13 billion dollars. These phases include economics, internship and residency training, community relations, nurse and other ancillary personnel supply, architecture, doctor-hospital relationships, and health insurance plans.

HIGH-PRESSURE TELEPHONE SECURITIES SALESMEN

An increasing number of complaints against high-pressure telephone security salesmen has been received by the regional office of the U. S. Securities and Exchange Commission in New York City, and among the victims of their nefarious conduct has been a considerable number of physicians. The New York state attorney general and the Securities and Exchange Commission some time ago published a 10-point guide to alert the public against fraudulent securities practices, but the number of complaints still mounts. The commission has forwarded a letter and the guide to The Journal (page 2213) in the hope that members of the medical profession thus will be enabled to avoid the pitfalls involved in the purchase of securities from unknown sources. The 10-point guide is stated simply and clearly, and the investing physician will find it useful.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

"The most important field of medical service in the future undoubtedly will be among the older people." I made this observation at the Governor's Conference on Medical and Hospital Services in Trenton, N. J., a little more than a year ago.

It is pleasing, therefore, to tell you that this month the American Medical Association has joined with the American Dental Association, the American Hospital Association, and the American Nursing Home Association to form the Joint Council to Improve the Health Care of the Aged. Every effort will be made to provide the best possible health care for America's older citizens and to aid in the solution of their various health problems.

I personally am delighted to be one of A. M. A.'s three representatives, along with Drs. Gunnar Gundersen, A. M. A. President-elect, and F. J. L. Blasingame, A. M. A. General Manager, on this potentially history-making joint council. We promise to uphold its objectives: "To identify and analyze the health needs of the aged, to appraise the available health resources for the aged, and to develop positive health care programs regardless of the economic status of the aged."

Your A. M. A. also pledges its full resources, including manpower and idea power, in working through the joint council for the health and well-being of the present 14 to 15 million persons in the over-65 age group and the millions who will come into this bracket in future decades.

Because our profession has been largely responsible for constantly increasing the life span of man in the United States, it is only fitting that medical doctors do all within their power to develop programs and facilities tailored to meet the health needs and finances of the aged.

The A. M. A.'s Committee on Aging and the Council on Medical Service have provided active and aggressive leadership in the field of health care for the aged. Your A. M. A. recognizes, however, that the solution of the problems of the aging for the present and future demands joint planning by medicine and other major providers of health care to the aged. Therefore, the joint council has been established to coordinate the efforts of the participating associations, to intensify the research of each sponsoring group, and to activate projects as rapidly as possible.

Individual members of the joint council already have undertaken special studies of the economic assets and resources of the aged, the extent and adequacy of voluntary health insurance for the over-65-year group, the utilization by the aged of hospital and nursing home facilities, and the review of all health programs of special value to the aged.

In addition, the joint council is reviewing existing facilities with special reference to the aged, particularly nursing home facilities with the hope of improving and increasing them. Another facet of the joint council's broad-range program will be to work closely with health insurance groups in an effort to improve the coverage of the aged and to see that their insurance dollars go further.

The joint council also believes that much can be done for older persons by the states and communities and it hopes to promote increased financial support for medical, hospital, and nursing home care of the aged from these local sources for those who cannot afford to pay.

It is impossible to give you a complete picture of the proposed program of the joint council, but I believe you get some idea of the magnitude of the endeavor and the unlimited opportunities for service in this field.

Medicine always has given more than its share to America and Americans. In coping with the problems of the aged, medical doctors once again are called upon for the best in the personality of medicine. I have the fullest confidence that our profession will deliberate intelligently, plan wisely, and act vigorously in the interest of our senior citizens.

David B. Allman, M.D.
Atlantic City, N. J.

ORGANIZATION SECTION

A. M. A. APPROVAL OF S. 1045

March 25, 1958

Honorable Warren G. Magnuson, Chairman
Senate Committee on Interstate and Foreign
Commerce
United States Senate
Washington 25, D. C.

Dear Senator Magnuson:

On April 2, 1957, a letter was sent to you by the American Medical Association stating our reasons for not testifying at that time on S. 1045, 85th Congress, a bill to establish an Office of Civil Aviation Medicine in the Civil Aeronautics Administration. We advised you that our Association was reviewing material in this field, and until its completion we would not be in a position to offer testimony on the bill. We requested you to defer action until we could supply your Committee with the results of our study and the recommendations resulting therefrom.

Our survey was initiated by an *ad hoc* committee studying the organization and functions of civil aviation medicine. A permanent Committee on Aviation Medicine has now been appointed by our Board of Trustees to continue the inquiry. On that Committee's recommendation the A. M. A. has adopted a position of active approval of S. 1045.

The American Medical Association is seriously concerned with the present state of civil aviation insofar as medical matters are concerned. Increasing air traffic and the jet age, accompanied by increased physical demand on pilots require a substantial revision in the present method of handling many aspects of aviation medicine. Specifically, a separate medical office should be established in the Civil Aeronautics Administration with the administrative status of the Office of Civil Aviation as proposed in S. 1045.

The establishment of physical standards for and the medical evaluation of civil airmen must be carried out by physicians experienced in aviation medicine. Because of the operational tasks of airmen, their physical and mental fitness, and ability to perform under normal and emergency conditions must be assured. Medical determinations should be conducted by personnel who have the necessary professional qualifications and experience.

The proposed Civil Aeronautics Medical Research Laboratory seems desirable and necessary.

We approve the "Office of Civil Air Surgeon" proposed in S. 1045. We feel that he should be directly responsible to the Civil Aeronautics Administrator in matters of policy, administration, regulations, etc. We understand that the direct responsibility of the Civil Air Surgeon to the Administrator is not clear at the present time to some persons. We would suggest that steps be taken to clarify this relationship.

We endorse the transfer of the rule-making authority for medical standards from the Civil Aeronautics Board to the Civil Aeronautics Administration. These government regulations should be developed, drafted, promulgated and administered by competent and qualified specialists. Unlike the CAA, the Civil Aeronautics Board does not have qualified medical personnel.

While we do not suggest that this bill is the only method by which the needed reforms in civil aviation medicine may be accomplished, and while we do not know whether the administrative organization proposed by this bill is the best possible one in all details, we do believe that S. 1045 represents the best mechanism currently proposed for accomplishing necessary reforms. (In December, 1957, the House of Delegates of the American Medical Association adopted a resolution on this subject.) Although a copy of this resolution has already been supplied to you, I am attaching another copy for the information of your Committee and for inclusion in the record.

Sincerely yours,
F. J. L. Blasingame, M.D.
General Manager

NEW A. M. A. PUBLICATIONS

An A. M. A. pamphlet, "Are You Fit to Drive?" urges drivers to contact their physicians if they are in doubt about their fitness. Prepared by the A. M. A. Committee on Medical Aspects of Automobile Injuries and Deaths in cooperation with the Center for Safety Education at New York University, the booklet contains information about those conditions that can adversely affect driving skills—emotional upsets, driver attitudes, sleepiness, medicines, faulty vision, certain nerve and heart disorders, diabetes, old age and drinking. For distribution through physicians' offices, the booklet is available from the Association of Casualty and Surety Companies, 60 John St., New York 38. Price is $4.60 per 100 copies, regardless of quantity.

A new A. M. A. pamphlet entitled "Protecting the Health of the High School Athlete" calls for the sponsoring of high school sports injury conferences to instruct coaches, athletic directors, and team physicians on the early recognition of injuries, appropriate first-aid measures, and the prompt referral of injured players for medical or dental care. The booklet was prepared under the auspices of the A. M. A. Committee on Injury in Sports. Copies may be secured from the A. M. A. Bureau of Health Education.

FEDERAL MEDICAL LEGISLATION

Second Session, 85th Congress

Social Security

S. 3086, by Senator Proxmire (D., Wis.), is of vital importance to the medical profession in that it is similar to the Forand Bill H. R. 9467 as it provides, among other things, a program of free hospitalization. To some extent, however, it goes even further than does the Forand Bill. The bill would provide a program of free hospitalization of 60 days in any 12-month period for (*a*) persons eligible for retirement benefits; (*b*) dependents of persons eligible for retirement benefits; and (*c*) dependents of individuals eligible for disability benefits (but not the disabled individual himself). The secretary of the Department of Health, Education, and Welfare would enter into agreement with individual hospitals to provide hospital services, defined as drugs and appliances furnished by a hospital to any individual as a bed patient: bed and board and such nursing service, laboratory services, ambulance services, operating room, staff, and other services, and drugs and appliances as are customarily furnished by such hospitals to its bed patients, either through its own employees or through persons with whom it has made arrangements for such services, drugs, or appliances. This includes such medical care as is generally furnished by hospitals as part of hospital care for hospital patients. Such terms shall not include care in the tuberculosis or mental hospital.

The secretary would be authorized to utilize the services of private nonprofit organizations representing "qualified providers of hospital services" or which "operate voluntary insurance plans" to reimburse hospitals for service.

The bill would increase the wage base upon which Social Security taxes are paid from the present rate of $4,200 to $7,500, beginning Jan. 1, 1959. Maximum monthly family benefits would increase from the present rate of $200 to $334. The bill would provide a new formula which would increase the benefits paid to an individual. It would also amend the Internal Revenue code to make the $7,500 wage base subject to an increasing tax rate to the extent that, beginning in 1975, the self-employed individual, with an income of $7,500 or more, would pay $534.38 for Social Security coverage; the employed individual and his employer would pay $375.00 each. These are only a few of the highlights of the bill by Senator Proxmire.

H. R. 10532, introduced by Representative Dellay (D., N. J.), is identical with the Forand Bill, H. R. 9467, to amend the Social Security Act to increase benefits under the Old Age, Survivors, and Disability Insurance Programs, and to provide insurance against hospital and surgical services for persons eligible for retirement benefits. The import of the Forand Bill is found in an editorial in THE JOURNAL, (165:1568 [Nov. 23] 1957) and in the President's Page (*J. A. M. A.* 165:1701 [Nov. 30] 1957).

H. R. 10578, introduced by Representative Dingell (D., Mich.), is similar to S. 1811 by Senator Revercomb (R., W. Va.), and would redefine disability for purposes of entitlement to disability insurance benefits and the disability freeze. The applicant, who meets other requirements and could not obtain employment in any occupation similar to the work he engaged in prior to his disability because of his impairment, would be eligible for disability payments or freeze benefits.

H. R. 10583, introduced by Representative Dingell (D., Mich.), would amend the Social Security Act to provide that certain determinations of disability made by other federal or state agencies shall be accepted as proof of disability under the Social Security Act. More comprehensive analysis of the bills mentioned can be secured if desired by contacting the Washington office of the A. M. A.

Welfare and Benefit Plans

Congress was apparently impressed last year at the hearings by the evidence of mishandling of funds of union-sponsored welfare and benefit plans by union officials to the extent that the number of bills to place such plans under federal regulation and control continues to grow. One of the latest bills to be introduced is H. R. 10102 by Representative Berry (R., S. D.), which is identical to S. 3044, by Senator Mundt. H. R. 10236, by Representative Holt (R., Calif.), and H. R. 10272, by Frelinghuysen (R., N. J.), are identical to that of S. 3097, by Senator Smith (R., N. J.), which is the administration's bill. It is identified as the "Labor Reports Act of 1958" and would require labor organizations to file, with the Secretary of Labor, information as to their organizational structure, officers, activities, procedures, and financial activities, including welfare and benefit plans. Employers would also be urged to file reports on transactions with labor organizations, including participation in welfare benefit plans. An office of Commissioner of Labor Reports would also be created in the Department of Labor and would carry out the intent of the bill and administer the regulations established by the Secretary of Labor. The secretary would

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From the Washington Office of the American Medical Association.

have subpoena power to require the submission of reports and financial data. A labor union which willfully failed to make the reports required by the bill or to comply with any regulations established under it would (*a*) lose its rights and privileges under present law; (*b*) not be permitted to appeal to the National Labor Relations Board for aid and relief; and (*c*) lose its tax exempt status. An employer failing to submit the required reports would not be able to appeal to the NLRB for relief. Individuals failing to comply with the provisions of the bill would be subject to a fine up to $5,000 and/or five years in jail.

Senator Knowland (R., Calif.) introduced S. 3068 for the purpose of insuring democratic control of labor organizations by membership. To accomplish this, the bill would amend the Labor Management Relations Act of 1947 to provide referendums by secret ballot if requested by 15% of the membership of a union for the purpose of (*a*) amending, modifying, or revising the organizational structure or procedures of a union; (*b*) election or re-call of officers; and (*c*) the protection of members from unfair labor practice. An "employee welfare plan" is defined as a fund or program established by the employer providing benefits in the case of illness or disability or upon retirement or death of the employee. These welfare plans would be registered annually with the Securities and Exchange Commission. The registration would contain information as to (*a*) the nature and type of plans and the benefits provided under them; (*b*) number of employees covered; (*c*) assets and investments of the funds; (*d*) receipts and disbursements during the proceeding year; and (*e*) whatever other information the commission might require.

If violations of the law were found on examination of the report by the commission, the attorney general or appropriate state enforcement agency would be informed. The commission would then have subpoena power to enforce its requests for information about their plans. Officers failing to regulate welfare plans as required by the commission would be liable to fines up to $1,000 or one year in prison or both.

Tax Department

New bills to liberalize tax deductions for various expenses continue to be introduced. In regard to medical expenses, Representative Matthews (D., Fla.) introduced H. R. 10394 which is identical to H. R. 7347 by Representative Dellay (R., N. J.) and which would eliminate present provisions that restrict medical expense deductions to the excess of 3% of taxpayer's adjusted gross income. It would allow as a deduction all medical expenses not covered by insurance, including drugs for a taxpayer or his dependents. S. 3226, introduced by Senator Long (D., La.), is identical to H. R. 9633 by Representative Boggs (D., La.) and to H. R. 9417 by Representative Miller (R., Md.), and would permit a taxpayer 65 years of age or older, who is disabled, to deduct medical expenses for himself and for his spouse if age 65 and also disabled, not to exceed $20,000 in any one year.

Tax deduction for higher education is the subject of H. R. 10506 by Representative Scott (R., Pa.). H. R. 10543 by Representative May (R., Conn.) and S. 3162 by Senator Smathers (D., Fla.) are similar to the many other bills mentioned on tax deduction for higher education. The main difference in the bills is in the amount of deduction to be allowed for higher education, and whether or not the deduction would effect an increase in the personal income tax exemption or would be taken as a straight deduction. H. R. 10506 would increase the personal tax exemption from $600 to $1,000 for a dependent attending college. H. R. 10543 would allow a deduction of $800 per year for tuition and fees for a taxpayer or his spouse or his dependents if they are students for five calendar months at an educational institution above the 12th grade. S. 3162 would allow the taxpayer to deduct all expenses directly attributable to attendance at college for himself, his spouse, or his dependents.

Something new and of special interest to physicians are the following bills identical to each other: H. R. 10617 introduced by Representative Judd (R., Minn.), H. R. 10499 introduced by Representative Rains (D., Ala.), and S. 3194 introduced by Senator Sparkman (S. 3194 now has 34 senators as co-sponsors). These bills would amend the Internal Revenue Code of 1954 so as to establish an initial program of tax adjustment for small and independent businesses and for persons engaged in such businesses. Also included is a Jenkins-Keogh type tax deferment proposal. This would permit any individual who is not covered by or receiving payments from an employer's pension, annuity, or stock bonus plan to deduct from his taxable income an amount paid by him each year to obtain retirement income for himself or payments to his beneficiaries. The annual payments, called "retirement deposits," would be limited to 10% of the adjusted gross income or $1,000, whichever is less.

For persons between ages of 50 and 70, an additional 10% of the above formula could be added for each year over the age of 50. If an individual did not make retirement deposits equal to the amount allowed him for any given year, he could increase his deductions over the next five years by an amount equal to, but not exceeding, the total of his "unused deduction." Retirement deposits could be in the form of money placed in a restricted retirement fund operated by a bank, or as premiums under a restricted retirement policy issued by a life insurance company.

Periodic payments made to the taxpayer after age of 65 or to his beneficiaries would be treated as ordinary income for tax purposes. If a lump sum distribution is made to the taxpayer after he has reached the age of 65, and if the plan or policy has been in effect for five years, the tax would be no more than five times greater than the increase resulting if only 20% of the total has been distributed. The same tax rate would be applied if the lump sum payments were made to the taxpayer's estate or his beneficiaries after his death.

Veterans

The bill by Representative Weaver (R., Neb.), H. R. 10130, identical to H. R. 10028 by Representative Teague (D., Texas) provides that no VA hospital, domiciliary, medical center, or regional office could be closed or transferred unless the House Veterans Affairs Committee (of which Representative Teague is chairman) is notified 90 days in advance. H. R. 10134 by Representative Winstead (D., Miss.) is identical to H. R. 9726 by Representative Smith (D., Miss.) in that it provides that the VA shall not sever service connection for any veteran's disability when said veteran has been in receipt of compensation for 10 or more years.

Surplus Property

The bill by Senator Holland, S. 3121; H. R. 10010 by Representative Herlong; and H. R. 10118 by Representative Matthews (Democrats, Fla.), are identical bills and deal with authority to dispose of certain federal surplus property to public health agencies and states. "Public Health" is defined to include sanitation activities, such as sanitary land fill programs, mosquito and insect control programs, malaria control programs, and drainage programs. Also included in the definition of "public health agencies of the state," are those agencies carrying on the above programs.

Miscellaneous

H. R. 10177 introduced by Representative Lane (D., Mass.) would create a presumption that certain impairments of health caused by hypertension or heart disease of a federal or District of Columbia employee is incurred in line of duty for purposes of certain retirement and disability compensation laws or system.

H. R. 10178 introduced by Representative McDonough (R., Calif.) would authorize 12 million dollars for a six-year period, (two million dollars yearly beginning with fiscal year 1958) for grants to states and public and nonprofit organizations for establishing methods and techniques for understanding the magnitude, characteristics, and needs of the physically handicapped and for developing methods of coordinating available resources to increase the activity of handicapped individuals. Data collected as a result of these studies would be used to project the needs and to determine the federal government's future role in the vocational rehabilitation field.

H. R. 10310 introduced by Representative Anfuso (D., N. Y.), and S. 3167 by Senator Javits-Ives (R., N. Y.), are identical and would provide for the construction of a public health hospital in the state of New York to be used in the treatment of drug addicts, and would possibly be located on Ellis Island.

H. R. 10404 introduced by Representative Williams (D., Miss.) is similar to H. R. 6747 by Representative Harris (D., Ark.), and S. 1895 by Senator Hill (D., Ala.) and would prohibit the use of new food additives which have not been adequately protected to establish their safe use under the conditions of their intended use. "New food additives" is defined in the bill as "any substance . . . intended to be used . . . in the manufacture, packing, processing, preparation, or other fabrication of any food and thus to become a component of such food, but which is not generally recognized, among experts qualified by scientific training and experience . . . as safe for use under the conditions of its intended use."

S. 3089 by Senator McNamara (D., Mich.) and Senator Humphrey (D., Minn.) is identical to H. R. 9822 by Representative Fogarty (D., R. I.) and S. 2994 by Senator Newberger (D., Ore.) and Senator Kefauver (D., Tenn.) would provide for a White House Conference on Aging and to assist the states conducting similar conferences on aging prior to the White House Conference and prior to Dec. 31, 1958.

REFERRAL CENTERS FOR CHRONICALLY ILL

A survey of five information and referral centers for the chronically ill is being conducted by the A. M. A. Council on Medical Service. Located in Chicago, Cleveland, Milwaukee, San Francisco, and Essex County, N. J., these centers operate as clearing houses for information on facilities for the care of chronically ill in the community. The Council's report on these centers should be of interest to physicians concerned with chronically ill patients. Any information on similar centers in other communities will be welcomed by the Council.

JOURNAL INDEX

The index to volume 166 of The Journal will appear in the May 10, 1958, issue. Those who wish extra copies of the index may receive them, without charge, on request to the Order Department, American Medical Association, 535 N. Dearborn St., Chicago 10.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

POSTGRADUATE COURSES

The following notices of postgraduate courses for physicians have not previously been published by the Council and are presented for information only:

An intensive three-day, 15¼-hour course, **Clinical Electrocardiography**, is scheduled May 2-4, 1958, at the Huron Road Hospital, 13951 Terrace Rd., Cleveland 12, for physicians in general practice. Methods of education will be lectures with visual aids, concluding with interpretations of "unknown" tracings by the panel and the audience. The fee will be $25. Additional information may be obtained by addressing the Staff Office of the hospital.

An intensive, multidiscipline course, **Epidemiology and Control of Food-Borne Diseases**, will be offered May 19-23, 1958, at the Communicable Disease Center, U. S. Public Health Service, 50 Seventh St. N.E., Atlanta 23, Georgia. It is designed to provide physicians, veterinarians, nurses, and other members of public health teams with current information and techniques on the subject. Further information may be obtained from Chief, Training Branch, at the Center.

The first annual postgraduate **Seminar in Pediatrics** at the Children's Hospital, 2125 Thirteenth St. N.W., Washington 9, D. C., will be conducted by the faculties of Georgetown and George Washington Medical Schools in cooperation with the National Institutes of Health and the military medical centers of Washington May 22-24, 1958. The fee will be $25. Further information may be obtained from the Director of Medical Education of the Children's Hospital.

A three-week intensive course on **Tuberculosis and other Pulmonary Diseases** is scheduled for June 2-20, 1958, at the Trudeau Foundation, Saranac Lake, N. Y., at a fee of $100. Enrollment will be limited. Inquiries may be addressed to Box 500, Saranac Lake, N. Y.

An intensive five-day course, four hours each afternoon, on **Normal Ocular Histology and Histopathology** will take place June 2-7, 1958, at the New York Eye and Ear Infirmary, 218 Second Ave., New York 3. Registration is limited to 15, at a fee of $100 each. The slides and specimens used will be drawn from a large collection of material. For further information, address the Registrar, Institute of Ophthalmology of the Americas at the above named hospital.

The fifth June workshop on **Developing Concepts in Community Rehabilitation Services** is scheduled for June 2-20, 1958, at the Institute for the Crippled and Disabled, 400 First Ave., New York 10, in affiliation with Columbia University. The intensive course for physiatrists, psychiatrists, occupational and physical therapists, social workers, and others active in rehabilitative health services will consist of lectures, seminars, clinical demonstrations, and problem clinics at a fee of $115, if graduate credit is desired, or $100 otherwise. A limited number of subsistence stipends are available to United States citizens who could not otherwise attend. Further information may be obtained from Director of Professional Education, Institute for the Crippled and Disabled.

An intensive four-day, full-time course, **Fundamentals of Psychiatry and Psychosomatic Medicine—Principles of Diagnosis and Treatment**, will be presented by the Psychiatric Institute of the University of Maryland School of Medicine and the National Institute of Mental Health, U. S. Public Health Service, June 9-12, 1958, at the Psychiatric Institute, Baltimore. The first two days will consist of lectures and demonstrations with patients, registrant participation, and panel discussion. The final two days, with enrollment limited to 20 physicians, will provide opportunity for supervised patient interviews by registrants. Further information may be obtained from Postgraduate Committee, University of Maryland School of Medicine, 522 W. Lombard St., Baltimore 1.

The Massachusetts Institute of Technology will offer an intensive course for research workers in biology and medicine July 8-18, 1958, **Modern Research Methods in Biology and Medicine**. By means of lectures, demonstrations, general discussions, guided tours, and visits to research laboratories, an intensive introduction will be provided to physical research methods and instruments applicable to biological and medical research, at a tuition of $250. Further information may be obtained from Dr. Kurt S. Lion, Biophysics Department, Massachusetts Institute of Technology, Cambridge 39, Mass.

MEDICINE AND THE LAW

MEDICAL DEFENSE IN UNITED KINGDOM

It is now well established that since the advent of a comprehensive National Health Service on July 6th, 1948, medical litigation in the United Kingdom has increased threefold. The payments made by hospital authorities in compensation of all kinds in England and Wales during the material years are as follows: 1948-1949 £7,500, 1950 £23,000, 1951 £38,000, 1952 £106,000, 1953 £153,000, and 1954 £159,000. These figures do not take into consideration the very large sums paid by defense organizations in unsuccessful suits at law or in settlements out of court.

Persons who have examined the professional liability problem have attributed the increase in litigation to several factors. First of all, they say that the advent of the National Health Service has contributed materially to the increase. Under that service all citizens, with certain specific exceptions, are obliged to pay, directly and indirectly, for the provision of a national general practitioner and hospital service, including consultants and specialists of all kinds and special forms of therapy. Prior to 1948, the benefits of the National Health Service then in existence were of a limited order and exclusive of hospital services; the beneficiaries also were limited in number and financial status.

Compulsory Contribution

Since a health service now exists which is available to all, it is not surprising that the pressure on doctors, nurses, and others causes conflict and disagreement between physicians and patients from time to time. Allegations of wrong treatment, of wrong diagnoses, and of other forms of professional negligence are associated with adverse criticism and unsatisfactory clinical results.

Disappearance of Voluntaryism

The hospitals are no longer voluntary institutions maintained by voluntary workers with grants from private local and national organizations. The medical and surgical staff no longer provide gratuitous services. The spirit of voluntaryism has disappeared. The staff are now fully paid for the services they render. As a consequence, aggrieved or disgruntled persons regard these state hospitals as possessing a bottomless purse into which they may dip for the payment of compensation when they have a real or imaginary cause for complaint.

Legal Aid and Advice Act, 1949

Another factor that has doubtless increased medical litigation is the passing of the Legal Aid and Advice Act, 1949. Under that act a scheme has been instituted in the United Kingdom whereby people of a certain economic status are enabled to litigate at little or no cost to themselves. The prospective litigant must merely satisfy a local committee that there is a prima facie case warranting investigation by a court. For this purpose, in a professional liability case, a report is obtained from one medical practitioner on the work of another. On this evidence the committee reaches a decision as to whether or not to issue a legal aid certificate for the benefit of the prospective plaintiff. Nearly 80% of all cases of medical litigation held in the United Kingdom involve plaintiffs holding a legal aid certificate.

It should not be thought, however, that there is an absence of justification for the legal aid scheme. Indeed, figures published by the law society are demonstrative of the fact that the scheme serves a social purpose that must have been crying for solution for some time past. Taking the figures published in *The Times* of Feb. 24th, 1955, the law society announced that in the previous five years applications for legal aid in all cases—not only medical cases—exceeded 200,000. The great majority of these litigants won their cases and recovered over £6,000,000 in damages. For the past three years, the report went on, the percentage of success attained by legally aided litigants was in the neighborhood of 89% of the cases brought in the Queen's Bench division, and a little lower in the Chancery division. In the court of appeal the figure of successful appeals was 53%.

It is not accurate, as is usually done, to describe the scheme as "free legal aid," as in 63% of the cases some contribution is made by the litigant. Indeed, in the first four years of its operation, litigants contributed over £2,000,000, and over £1,000,000 was contributed by unsuccessful opponents. The state contributed nearly £2,500,000.

A further factor contributing to the increase of medical litigation derives from a decision of a court of appeal whereby hospital authorities are made responsible for the acts or omissions of the members of their staffs in the pursuit of their professional and technical duties for which they are engaged. Where many litigants would hesitate to sue their own family doctor or a popular surgeon or physician who has helped them towards recovery, they have no hesitation in suing a regional hospital board or a hospital management committee or a board of governors. These institutions represent a collection of individuals with high resounding names and considerable powers, as well as the backing of the Ministry of Health, and behind that the treasury of the state. To sue such a body is not likely to cause the qualms of conscience that would occur if the proceedings were directed against an individual surgeon or physician. They have neither a body to kick nor a soul to be damned.

Negligence

The standard of care required of a medical practitioner was fully expressed by a Lord Chief Justice nearly 100 years ago in the case of *Rich* v. *Pierpoint* and, 26 years later, in the case of *Lanphier* v. *Phipos.* It reads as follows.

> Every person who enters into a learned profession undertakes to bring to the exercise of it a reasonable degree of care and skill. He does not undertake, if he is an attorney, that at all events you will gain your case, nor does a surgeon undertake that he will perform a cure, nor does he undertake to provide the highest possible degree of skill. There may be persons who have higher education and greater advantages than he has, but he undertakes to bring a fair, reasonable, and competent degree of skill. Practitioners may be guilty of mistakes and, indeed, often are. They may be guilty of effecting a wrong diagnosis, of tendering wrong advice, and indeed there may ensue some unfortunate catastrophe. The test ultimately shall not be whether a mistake was committed, but whether the practitioner exercised all that degree of care and skill which a reasonable man would expect him to exercise, and which he was competent to exercise. If he has done all that he should and could do and left undone nothing that he should and could do, it is highly improbable that he would be found guilty by any Judge or Jury.

Since that time a series of cases have been heard and decided in the English and Scottish courts affecting general practitioners and hospital medical officers. For those who are interested, there is a clear progress of evolution from the attitude adopted toward hospital medical officers in the early part of this century and that adopted toward them and their employers at the present time. To discuss these several cases in their sequence would entail considerable space and certainly more than is available or warrantable in this article. Reference to the legal and professional press could be made by those who desire to pursue this matter in further detail. Suffice it to say, however, that whereas in the early part of the century the governing body of a hospital was not thought to be liable for the acts of omissions of the hospital staff, save when they were engaged in a ministerial capacity, it has now been held by a deciding case of commanding importance that the employing authority does carry that responsibility.

The machinery also exists whereby the employing authority can serve a notice of contribution on the medical employee; or bring him in as a third party and thus point to him, or recover from him, as the negligent person, the damages awarded by way of compensation for the wrong suffered by the patient.

It follows from this that it is no less important today than it was 80 years ago for there to be in existence an appropriate medical organization to advise, protect, and indemnify a doctor when he is confronted with medical litigation.

Medical Defense Union

The telegraphic address of The Medical Defense Union in London is "Damocles." This word was expressly chosen to symbolize the medicolegal risk confronting every medical practitioner in his professional life. It is difficult for the modern practitioner to realize the state of affairs that existed before the Medical Defense Union was constituted to mitigate the hardships of the law as it then pertained to medical practice. In those days if a practitioner was prosecuted for negligence or malpractice, he had to arrange for his own defense and bear the cost of it himself; and if he were the victim of slander or libel he had to sue his persecutor at his own expense or suffer in silence. His case, however good, was apt to be prejudiced by lack of expert advice and, even if were successful in the courts, he might find himself in severe financial straits owing to the costs of the action. It was not uncommon for appeals to be made in the medical press for funds to help him in his difficulties, and it says much for the generosity of the medical profession that those were rarely made in vain.

During the 1880's it occurred to some members of the profession that attacks on medical practitioners were increasing in number and that many prosecutions, or threats of them, were animated by malice or based on frivolous pretexts. Two cases especially roused the indignation of the profession. In one of these two Dulwich practitioners, Dr. Bower and Dr. Keates, were subjected to a series of prosecutions and lawsuits which the *British Medical Journal* characterized as "very little on the hither side of vexatious litigation." The practitioners had performed a tracheotomy on a child found, after a provisional diagnosis of croup, to be suffering from diphtheria, and they instructed the father to suck the tube to remove any obstruction. The child died and the father contracted diphtheria. Subsequently the father instituted a charge of manslaughter against the two doctors, and after a five-day hearing in November, 1883, the magistrate dismissed the case without calling upon the counsel for the defense, remarking that "if he allowed the enquiry to proceed further, he would not only be sanctioning a prosecution, but a persecution as well, and that it would be next to wickedness on his part to commit, as he could not see one tittle of evidence to support the allegations set forth in the indictment." Undeterred by this denunciation the father then brought an action for negligence on the ground that the practitioners should have diagnosed diphtheria earlier and should have given a warning of danger of infection incurred by sucking the tracheotomy tube. There were two trials because the first jury could not agree. In the second trial the jury, after hearing the plaintiff's statement, thought it unnecessary to hear the defendants' counsel. Although the doctors were successful they incurred costs amounting to over £1,000 and had to endure the anxiety of long, drawn-out proceedings. Early in the case an appeal for funds to defray the expenses was launched by Sir William Jenner, and to this the profession responded with promptitude and liberality.

The second case was a more painful one, for the accused practitioner actually served eight months of a sentence of two years' imprisonment with hard labor before he was released with a free pardon. In November, 1884, Dr. David Bradley of Chesterfield was convicted of an attempt to commit a criminal assault on a woman patient. The profession clamored for his release and a memorial was submitted to the Home Secretary expressing the view that the evidence failed to support the charge and that due weight had not been given to the fact that the patient had been subject from childhood to epileptic fits and was liable to have delusions. It was generally believed that a conviction would never have been secured if adequate and available expert evidence had been submitted on Dr. Bradley's behalf. Eventually, the Home Secretary, on being satisfied that there was sufficient doubt of Dr. Bradley's guilt to warrant the granting of a free pardon, directed the prisoner's release. Again Sir William Jenner initiated a fund to help an unfortunate colleague to reestablish himself in practice after his tragic ordeal.

Such cases as these convinced medical practitioners of the very real risk they ran in their daily routine, and it was felt that the raising of funds after the event was not the ideal solution of the problem. The Medical Defense Union was thereupon born, albeit of lay parentage, on Oct. 23, 1885. It was registered as a company limited by guarantee and its Memorandum listed the following objects as being those for which it was established:

(i) To support and protect the character and interests of medical practitioners practising in the United Kingdom.

(ii) To promote honourable practice and to suppress or prosecute unauthorized practitioners.

(iii) To advise and defend or assist in defending members of The Union in cases where proceedings involving questions of professional principle or otherwise are brought against them.

(iv) To consider, originate, promote and support (so far as is legal) legislative measures likely to benefit the medical profession and to oppose all measures calculated to injure it: and for the purposes aforesaid to petition Parliament and take such other steps and proceedings as may be deemed expedient.

The promoters envisaged a membership of many thousands, an annual subscription of 10 shillings, a large reserve fund derived from members' guarantees and, possibly, an entrance fee.

The persons responsible for initiating the organization were all laymen, and the response given by the profession to the new body was mixed; some welcomed it, and others had doubts about its intentions. Some thought that a defense body should be organized by and within the profession, especially by the British Medical Association, but this was held to be impossible by the constitution of the association. One or two efforts made to bring medical defense within the scope of the benefits of members of the association have hopelessly failed.

Various branches were formed in different parts of the country, and in some of these local solicitors were appointed to act when instructed on behalf of the union. It was intended that these local councils should examine local applications for assistance. They were urged to ascertain the antecedents, position, and character of the accuser as well as the evidence he held to substantiate his claim. It was incumbent upon the local representative to formulate his recommendation for submission to the General Secretary, who would initiate the necessary machinery for the protection of the practitioner involved.

It would take a long time to describe the stormy experiences that the union underwent in its early years. Perhaps this is not the occasion to do so. Suffice it to say that with the passage of time the numbers joining the union grew year by year. A central council was appointed with a president and vice-president. The local branches were eventually disbanded. The whole of the administration and power was concentrated in the central body. Offices were taken in London, a secretary was appointed, and the infant grew from adolescence to adult status among the many professional bodies operating in London; long before it had reached its majority it had become firmly established. The fame of the union crossed the seas and the profession in New Zealand established a defense organization modeled on it. Requests for advice on establishment of other bodies were received from Canada and the United States of America. It handled libel and slander cases and malpractice actions, prosecuted unqualified persons, and gave much individual advice to members on miscellaneous problems raised in correspondence.

Its membership is now in excess of 45,000 medical practitioners and a small number of dentists. Its annual subscription for home members for unlimited indemnity does not exceed £3 per annum; an additional subscription is paid by members resident and practicing overseas, varying with the amount of financial protection desired. The union does not accept members in the United States and in some other parts of the world.

It is the firm belief and conviction of all who have studied its progress and its work that the union is indispensable to the medical profession of the United Kingdom. It is a dignified and highly accepted professional institution that has earned the authority to offer its hand to the doctor as Everyman and say

> I will go with thee, and be thy guide,
> In thy most need to go by thy side.

MEDICAL NEWS

ARIZONA

State Meeting in Chandler.—The 67th annual meeting of the Arizona Medical Association will be held at the San Marcos Hotel, Chandler, April 30-May 2. The faculty for the meeting includes Drs. Cyril M. MacBryde and Louis T. Byars, St. Louis; James F. Nolan and George C. Griffith, Los Angeles; William R. Arrowsmith, New Orleans; William C. Deamer and Robert S. Pollack, San Francisco; Juan A. Del Regato, Colorado Springs, Colo.; and Charles W. Elkins, Tucson. About 18 papers are scheduled, with question and answer periods to follow the presentations. Motion picture sessions and specialty luncheons are planned for the afternoons of May 1 and 2. The dinner dance is scheduled for May 2, 7:45 p. m. Entertainment includes a golf tournament May 3. For information write Dr. Leslie B. Smith, 826 Security Bldg., Phoenix, Ariz.

FLORIDA

Occupational Medicine Conference.—The second Conference on Occupational Medicine, sponsored jointly by the Medical Schools of the Universities of Havana, Cuba, and Miami, Florida, will be held in Miami, Aug. 18-22. William B. Deichmann, Ph.D., professor of pharmacology at the University of Miami School of Medicine, Coral Gables, is chairman of the conference, and Dr. M. Eugene Flipse, associate professor of medicine, is chairman of the program committee. Dr. Francisco Lancis y Sanchez, president of the Cuban Industrial Medical Society, and Dr. Rafael Penalver Ballina, of the University of Havana School of Medicine, are members of the planning committee. Proceedings of the conference will be in Spanish. Inquiries on attendance or papers may be referred to Dr. Deichmann.

ILLINOIS

State Anesthesiologists Meet in Chicago.—The annual meeting of the Illinois Society of Anesthesiologists will be held May 18 at the Hotel Sherman, Chicago. The morning will be devoted to a symposium, "Economic Problems in the Practice of Anesthesia," moderated by Dr. William O. McQuiston, Peoria, and including the following panelists: Drs. Wayne B. Slaughter, clinical professor of surgery, University of Wisconsin Medical School, Madison; Lindon Seed, Robert A. Beebe, and George Z. Wickster, Chicago; and Lawrence D. Ruttle, Joliet. In the afternoon, Drs. Morton D. Leigh, of Los Angeles, and Kenneth K. Keown, of Columbia, Mo., will present "Monitoring Devices in Pediatric Anesthesia" and "The Role of the Anesthesiologist in the Treatment of Coronary Disease," respectively. A business meeting and election of officers will follow the scientific program. For information write Dr. Huberta M. Livingstone, 5805 Dorchester, Chicago 37.

Chicago

Dr. Jenkinson Honored.—Former residents of Dr. Edward L. Jenkinson have honored their chief, who retired last September as professor of radiology and chairman of the department at Northwestern University School of Medicine, with establishment of "The Edward L. Jenkinson Fellowship in Radiology" at the Medical School. Dr. Jenkinson will retire in May after 41 years as director of the department of radiology, St. Luke's Hospital.

New Hospital at County Jail.—The new 50-bed hospital at Cook County jail was opened Feb. 3. The hospital was built with funds from regular maintenance accounts and with labor volunteered by maintenance men. A basement area of the jail, formerly used as a dormitory, was converted to create a 24-bed isolation ward for tuberculous patients, a 22-bed general ward, and a four-bed contagious disease ward. It has an operating room, x-ray room, receiving ward, oxygen equipment, and dental laboratory. Over 90% of inmate medical needs will be met by the new hospital facilities. The staff will include a full-time dentist, four part-time physicians, a part-time psychiatrist, a surgeon on 24-hour call, two full-time orderlies, six nurses, a lab technician, and three externs. Dr. Karl A. Meyer, medical superintendent, Cook County Hospitals, gave the dedication address.

MISSOURI

Premiere of Symphonic Overture.—The world's premiere of "Heloise et Abelard," a symphonic overture-fantasy written by Dr. Vincent T. Williams, of Kansas City, was performed recently over station WDAF, Kansas City, by Hans Schwieger and the Kansas City Philharmonic Orchestra.

Personal.—Dr. Albert B. Eisenstein has been appointed full-time director of the Division of Medicine at the Jewish Hospital of Saint Louis,

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Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

effective July 1, succeeding Dr. Sol Sherry, who is assuming a position as professor of medicine at the Washington University School of Medicine.—Dr. Ferdinand C. Helwig was honored recently when a dinner was held "marking his thirty years of association with St. Luke's Hospital."

Society News.—New officers of the St. Louis Academy of General Practice for 1958 are Drs. Walter C. Gray, president; Eugene W. Hall, vice-president; Charles A. Molden, president-elect; Vernon E. Michael, treasurer; Eugene V. Henschel, secretary.—The new officers of the Greater St. Louis Radiological Society are as follows: president, Dr. Sam J. Merenda; vice-president, Dr. Thomas F. Maher; and secretary-treasurer, Dr. Charles J. Cherre.

NEW YORK

Fellowship for Muscle Disease Research.—Award of the first McEachern Postdoctoral Fellowship, a $6,500 stipend for advanced training and research in the area of muscle disease, has been given to Jerald L. Connelly, Ph.D., currently a graduate fellow in the department of biochemistry, University of Rochester School of Medicine and Dentistry. Dr. Connelly's research will be conducted at the Institute for Enzyme Research, University of Wisconsin, Madison. The university has been granted $1,000 for laboratory maintenance in connection with Dr. Connelly's work, which will be under the supervision of Henry A. Lardy, Ph.D., professor of biochemistry. The fellowship is one of two established by the Muscular Dystrophy Associations of America, Inc., to provide opportunities for scientists who wish to follow careers in research or academic medicine. It was named in honor of the late Dr. Donald McEachern, associate professor of neurology at McGill University, Montreal, Canada, and a member of the associations' Medical Advisory Board. The other fellowship, named for the late Dr. Joseph L. Lilienthal, was awarded for the first time in November of last year.

New York City

Continue Study of Heredity in Polio.—Columbia University will continue studies of the mechanism that controls heredity in polio viruses under a grant of $70,226 from the National Foundation for Infantile Paralysis. The work, under the direction of Dr. Hattie E. Alexander, associate professor of Pediatrics, is being carried out at Babies Hospital, where Dr. Alexander is attending pediatrician. Her co-workers are Isabel Morgan Mountain, Ph.D., research associate, department of microbiology, who has been assigned to Pediatrics; Dr. Katherine Sprunt, research associate in pediatrics, and Dr. Gebhard Koch, of Germany, who has been invited to participate in the group.

Personal.—Dr. George E. Wakerlin has been appointed medical director of the American Heart Association. Dr. Wakerlin comes to the association from the University of Illinois College of Medicine, Chicago, where he has served as head, department of physiology, since 1937.—On March 1 Dr. Jesse D. Stark was elected a member of the Institute of Humanities of the Republic of France and awarded the Medal for Merite Scientifique.—The Western Electric Company announces the appointment of Dr. Edward J. Schowalter as medical director. In this newly created post, Dr. Schowalter will be responsible for over-all development and coordination of medical and health programs throughout the company. He assumed his new duties March 1.

OKLAHOMA

State Medical Meeting in Oklahoma City.—The Oklahoma State Medical Society will hold its 52nd annual meeting May 5-7 at the Municipal Auditorium, Oklahoma City. Eleven out-of-state speakers will present papers: Drs. Edwin L. Prien, Boston; Jacob A. Bargen and Charles W. Mayo, Rochester, Minn.; John E. Hobbs, St. Louis; Edgar J. Poth, Galveston, Texas; Charles H. Brown, Cleveland; Alvin J. Ingram, Memphis, Tenn.; Robert D. Moreton, Fort Worth, Texas; Kenneth C. Johnston, Chicago; Louis A. Soloff, Philadelphia; and John H. Githens, Denver. Thirty scientific and organizational exhibits will be located in the Zebra Room of the Auditorium. A physicians hobby show, technical exhibits, and round-table luncheons are planned. The president's inaugural dinner-dance will be held May 6, at 7 p. m. A golf tournament is scheduled for May 7. For information write the Oklahoma State Medical Association, Box 9696, Oklahoma City, Okla.

OREGON

Quartet Wins Competition.—For the third time the Forcep' Four, made up of University of Oregon Medical School students (and one graduate) won the annual Original All Northwest Barber Shop Ballad Contest, held Feb. 21-March 1. More than 3,000 persons turned out for the competition. The group includes Al Witt, senior, first tenor; Doug Day, senior, baritone; Ben Shepherd sophomore, second tenor; and Dr. W. Robert Day, second-year pediatrics resident, bass. The group, using live animals for "props," delighted the audience with "Jungle Town." The winners took home $300, individual trophies, and a large perpetual trophy.

PENNSYLVANIA

Summer Workshops in Health Education.—Health education workshops aimed at "a more effective community-school health education program" have been scheduled for six Pennsylvania colleges and universities this summer under the auspices of the

Inter-Agency Planning Committee, which includes the Medical Society of the State of Pennsylvania, the Pennsylvania Department of Health, Pennsylvania Department of Public Instruction, Pennsylvania Department of Welfare, and Pennsylvania Tuberculosis and Health Society. Enrollment is open to teachers, nurses, parents, school administrators, dental hygienists, guidance personnel, nutritionists, agency administrators, and public health personnel. A limited number of scholarships are available. The location of the workshops and the dates include Pennsylvania State University and Slippery Rock State Teachers College, June 9-27; Lehigh University, June 16-July 3; University of Pittsburgh and West Chester State Teachers College, June 23-July 11; and Temple University, June 30-July 18.

RHODE ISLAND

Annual State Medical Meeting.—The annual meeting of the Rhode Island Medical Society will be held May 13-14 in Providence. Dr. George W. Waterman, of Providence, president of the society, will present "Problems Facing the Medical Profession" the afternoon of May 14. Topics to be presented by out-of-state speakers include:

Clinical and Experimental Homotransplantation of Skin, Kidney, and Bone Marrow, Dr. Joseph E. Murray, Boston.
The Prevention of Somatic and Genetic Radiation Injury, Dr. Shields Warren, Boston.
Surgical Problems of the External Biliary Tract, Dr. Leland S. McKittrick, Boston.
Hiatus Hernia and Esophagitis, Dr. Richard H. Marshak, New York City.
When Should Heart Disease be Compensable, Dr. William E. R. Greer, Boston.
Neurosurgical Methods of Relieving Severe Chronic Pain in the Thorax and Abdomen, Dr. James C. White, Boston.

Other speakers are Drs. Americo Savastano and Henry C. McDuff, of Providence. For information write the Rhode Island Medical Society, 106 Francis St., Providence 3, R. I.

TENNESSEE

Dr. Grigorieff Goes to Vienna.—Wladimir W. Grigorieff, Ph.D., chairman, University Relations Division, Oak Ridge Tennessee Institute of Nuclear Studies, will take a one-year leave of absence to become chief of the Exchange Branch of the International Atomic Energy Agency Division of Exchange and Training of Scientists and Experts. He will leave Oak Ridge May 15 to assume his new duties June 1 in Vienna. The IAEA, formally inaugurated in Vienna in October, 1957, is an outgrowth of a proposal made by President Eisenhower four years previously. The agency is an international organization independent of any national government. Its purposes are to accelerate and enlarge the contribution of atomic energy to peace, health, and prosperity throughout the world, and to ensure that the assistance it provides is not used to further any military purposes. The IAEA staff is made up of representatives of many nations. Dr. Grigorieff has been national executive secretary of the American Nuclear Society since September, 1955.

UTAH

Ogden Surgical Meeting.—The 13th annual meeting of the Ogden Surgical Society will be held May 21-23 at the Orpheum Theatre, Ogden. Guest speakers include Drs. Harry E. Bacon, Philadelphia; Benjamin M. Black, Rochester, Minn.; Alexander Brunschwig and Gerald H. Pratt, New York City; William Dameshek and Claude E. Welch, Boston; Richard K. Gilchrist, Chicago; Roy G. Holly, Omaha; James F. Nolan, Los Angeles; Alton Ochsner, New Orleans; Col. Joseph R. Shaeffer, M. C., U. S. Army, Washington, D. C.; Col. Arthur B. Tarrow, M. C., U. S. A. F., Lackland Air Force Base, Texas; Owen H. Wangensteen, Minneapolis; and James V. Warren, Durham, N. C. A program of entertainment and a ladies' program are arranged. For information write to Dr. Leath D. Nelson, Washington Terrace, Ogden, Utah.

WISCONSIN

Annual State Meeting in Milwaukee.—The 117th annual meeting of the State Medical Society of Wisconsin will be held May 6-8 at the Milwaukee Auditorium and Hotel Schroeder. The Lucy Droessel Memorial Lecture of the Wisconsin Heart association will be presented by Dr. John W. Wilce, of Columbus, Ohio, on "Cardiac Effects of Athletic Work Stress." Papers presented by out-of-state speakers at the general sessions include:

The Organic Explanation of Some Behavior Disturbances, Dr. John C. MacQueen, Iowa City.
Oral Preparation for the Treatment of Diabetes, Dr. Howard F. Root, Boston.
Cancer Detection in the Office of the Generalist, Dr. John S. De Tar, Milan, Mich.
Perinatal Adjustments, Dr. Virginia Apgar, New York City.
The Life and Work of William Beaumont, Dr. Burrill B. Crohn, New York City.

Panel discussions, round-table luncheons, and scientific and technical exhibits are planned. Special functions include a golf tournament, the annual dinner (May 7), and the president's reception. For information write the State Medical Society of Wisconsin, Box 1109, Madison 1, Wis.

Society News.—Recently elected officers of the Wisconsin Radiological Society are: president, Dr. William W. Moir, Sheboygan; president-elect, Dr. Samuel R. Beatty, Neenah; secretary-treasurer, Dr. Farrell F. Golden, 5221 Tonyawatha Trail, Madison.——The executive offices of the Medical Society of Milwaukee County are now located at 756 N. Milwaukee St., Milwaukee 2, Wis.——The Wisconsin Society of Anesthesiologists has installed the following officers: president, Dr. Loren F. Thurwachter Jr., Milwaukee; president-elect, Dr. James W. Bookhamer, Milwaukee; and secretary-treasurer, Dr. Betty J. Bamforth, Madison.—The Brown-Kewaunee-Dorr County Medical Society was reorganized in 1957 into two separate societies: Brown County Medical Society, with Dr. Frank Urban, secretary, 302 Northern Building, Green Bay; and Dorr-Kewaunee County Medical Society, with Dr. Jack F. March, secretary, 413 4th St., Algoma.

Personal.—Dr. W. Theodore Bruns, has been named assistant director of the new Respirator Center under organization at the University of Wisconsin Hospitals. Last November the university regents approved appointment of a director for the Respirator Center, Dr. Arthur A. Siebens, who will join the staff April 1.—Dr. William B. Parsons Jr. has been appointed director of research of the Jackson Foundation, an institution organized in 1947 for medical research and education and housed in the Jackson Clinic Building, Madison. The foundation has recently received grants from the National Heart Institute, the American Heart Association, the Wisconsin Heart Association, and the Henry K. Wampole Laboratories, made to Dr. Parsons for his studies on the relationship between blood cholesterol and arteriosclerosis.—Dr. Gerald C. Mueller, department of oncology, University of Wisconsin Medical School, Madison, has left for several months of research in European laboratories under a George I. Haight Traveling Research Fellowship. Dr. Mueller's plans include virus research at the Max Planck Institute für Virusforschung, Tübingen, Germany, and visits to laboratories in England and Scandinavia. The University Research Committee selects the Haight fellows.

HAWAII

Annual Meeting in Honolulu.—The Hawaii Medical Association will hold its annual meeting April 30-May 4, in Honolulu. The program includes a discussion, "Some Recent Developments in Surgery," moderated by Dr. Clarence M. Burgess, and three panel discussions: Recent Advances in Internal Medicine, Recent Advances in Pediatrics, and Radioactive Isotopes. A four-man demonstration of recent developments in psychotherapy that can be used in practice will be given the morning of May 2, with an illustrated discussion on medical photography to be held that evening. Scientific and technical exhibits are planned, and entertainment includes a golf tournament (May 4) and a dinner dance (May 3). For information write the Hawaii Medical Association, 510 S. Beretania St., Honolulu 13, Hawaii. Members of the American College of Obstetricians and Gynecologists, whose meeting is being held in Los Angeles preceding the Hawaii meeting, are invited.

GENERAL

New Science Information Division.—Rolland J. Main, Ph.D., has been named director of the new Scientific Information Division of Eaton Laboratories, Norwich, N. Y. This new division will be part of the Scientific Department under the over-all supervision of William B. Stillman, Ph.D., research administrative coordinator. Dr. Main's division will collect, catalogue, and correlate all published and unpublished information on the company's products. It will also translate all pertinent scientific literature published throughout the world. The new division will service Eaton's research and medical departments and physicians. Its staff includes medical editors, translators, literature scanners, and medical and research librarians. Dr. Main, who was professor of physiology and lecturer in pharmacology, Medical College of Virginia, Richmond, for 15 years, will continue to supervise Eaton's medical information services.

Society News.—The officers of the **Central Surgical Association** are: president,Dr. William A. Altemeier, Cincinnati; president-elect, Dr. Charles D. Branch, Peoria, Ill.; secretary, Dr. Angus D. McLachlin, London, Ontario; treasurer, Dr. Chester B. McVay, Yankton, S. D.; and recorder, Dr. Robert T. Tidrick, Iowa City.—At its 35th annual meeting the **American College of Radiology** elected the following new officers: president, Dr. Vincent W. Archer, Charlottesville, Va.; vice-president, Dr. Ivan M. Woolley, Portland, Ore.; and elected to four-year terms as chancellors on the board of chancellors, Drs. Harold O. Peterson, St. Paul, Minn., and John A. Evans, New York City.—Officers of the **Society of American Bacteriologists** for 1958 are: president, Dr. Harry Eagle, Bethesda, Md.; vice-president, Philip R. Edwards, Ph.D., Chamblee, Ga.; secretary, E. M. Foster, Ph.D., Madison, Wis.; and treasurer, John Hays Bailey, Dr.P.H., Rensselaer, N. Y.

Medical Science Scholars.—The John and Mary R. Markle Foundation announces the appointment of 25 Scholars in Medical Science, all faculty members of medical schools in the United States and Canada. The sum of $750,000 has been appropriated toward their support to the schools where they will teach and do research. For each scholar appointed, the Foundation has allocated $30,000 to the school at the rate of $6,000 a year for five years. The purpose of the program is "to strengthen medical education by offering academic security and financial help to teachers and investigators in medical schools early in their careers." In the 11 years the plan has been in operation, 231 doctors in 74 medical schools in the U. S. and Canada have received help from appropriations totalling $6,800,000. The 25 scholars were selected from 57 candidates nominated by medical school deans. The foundation was established in 1927 by the late John Markle, Pennsylvania coal operator, "to promote the advancement and diffusion of knowledge . . . and the general good of mankind."

National Meeting of Clinical Research Federation.—The American Federation for Clinical Research will hold its national meeting May 4 at the Steel Pier Theatre, Atlantic City, N. J. Foreign participants include Drs. Julien I. E. Hoffman and George G. Rowe, of London, England, who will present "Some Factors Affecting Indicator Dilution Curves in the Presence and Absence of Valvular Incompetence," and Oliver M. Wrong and Howard E. F. Davies, of Manchester, England, presenting "The Excretion of Acid in Renal Disease." Section meetings under joint sponsorship of the federation and the American Society for Clinical Investigation will be held in the afternoon and evening. Presiding will be Drs. James V. Warren, Laurence H. Kyle, Arnold S. Relman, Lawrence E. Young, Samuel P. Martin, III, Albert I. Mendeloff, and Robert R. Wagner. For information write Dr. William W. Stead, Veterans Administration Hospital, 54th Street and 48th Avenue South, Minneapolis 17, Minn.

Neurologists Annual Meeting in Philadelphia.—The 10th annual meeting of the American Academy of Neurology will be held April 21-26 at the Bellevue-Stratford Hotel, Philadelphia. The Robert Wartenberg Memorial Lecture, "The Pathological Basis of Chorea and Choreoathetosis," will be given by Dr. Joseph G. Greenfield, London, England. Over 60 papers are scheduled for presentation at the general sessions, including "The Carcinomatous Neuromyopathies," by Sir Russell Brain, London, England. About 54 papers will be read by title. Symposiums on Pharmacological Stimulation of the Central Nervous System, Neurochemistry of Amino Acids and of Nucleotides, and Higher Brain Functions are planned. A separate meeting of the Section of Neuroanatomical Sciences will be held April 24. Movies and scientific and technical exhibits are planned. The annual banquet will be held April 25. For information write the American Academy of Neurology, 3501 E. 54th St., Minneapolis 17, Minn.

Meeting of Bacteriologists in Chicago.—The 58th general meeting of the Society of American Bacteriologists will be held under the auspices of the Illinois Branch April 27-May 1 at the Morrison Hotel, Chicago. Over 400 papers are scheduled for presentation at the five major division meetings, and 38 will be read by title. Five symposiums are planned: Animal Viruses and Tissue Culture, Problems of Cell Permeability, Effects of Broad Spectrum Antibiotics on Cell Metabolism, Bacterial Cell Walls, and Staphylococcal Infections. A special lecture, "The Key to Lockjaw," will be given April 27 by W. E. van Heyningen, of the University of Oxford, England. The presidential address will be given the afternoon of April 28 by Dr. Harry Eagle, of the National Institutes of Health. Round-table discussions, scientific and technical exhibits, six motion pictures, and tours are planned. The president's reception and dinner will be held April 29. For information write the Society of American Bacteriologists, Dr. Edwin M. Foster, Secretary, University of Wisconsin, Madison, Wis.

Fellowships for Mental Health Training of Clergy.—The Academy of Religion and Mental Health has announced a grant of $10,000 from the Smith, Kline and French Foundation to provide fellowships for theological students and clergymen of all faiths who want to become chaplains in mental hospitals. A grant of a similar amount for the same purpose was given in 1957. The program will be known as the Smith, Kline and French Foundation Chaplaincy Fellowships. The foundation is the independent philanthropic arm of the Laboratories. The Academy of Religion and Mental Health in a nonsectarian, nonprofit organization founded in 1954 "to develop further relationships between religious groups and the mental health professions." Its membership includes 1,200 members of the American Psychiatric Association, 500 members of the American Psychological Association, 800 clergymen, and more than 400 psychiatric social workers, cultural authropologists, educators, and laymen. It serves as a consultant to hospitals, medical schools, and mental health organizations in this country and abroad.

Medical Lecture Tour to Asia.—The Asia-Pacific Academy of Ophthalmology is sponsoring a good will tour to countries of the Orient following the International Congress of Ophthalmology in Brussels in September. The purpose of this tour, which is to last about one month, is to hold joint meetings with ophthalmologists in Pakistan, India, Thailand, the Philippines, and Hong Kong. The Asia-Pacific Academy of Ophthalmology was organized in 1957. Its principal purposes are "to extend ophthalmologic knowledge and to advance the arts and sciences of ophthalmology and related sciences in Asia and in countries bordering the Pacific Ocean; . . . to stimulate research in tropical and systemic eye diseases, that are particularly prevalent in Asia and in countries bordering the Pacific Ocean; to cultivate social and fraternal relationship of physicians residing in Asia; . . . to offer postgraduate instruction in ophthalmology through the medium of lectures, round-table discussions, seminars, clinics, films and other means." Physicians other than ophthalmologists and their families are invited. Those desiring to participate in the postgraduate lectures and seminars on medical subjects pertinent to ophthalmology should contact Dr. William John Holmes, Liaison Secretary, Suite 280, Alexander Young Building, Honolulu 15, Hawaii.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories and possessions in the weeks ended as indicated:

Area	March 29, 1958		March 30, 1957
	Paralytic Type	Total Cases	Total
New England States			
Maine	..	..	..
New Hampshire	..	..	..
Vermont	..	..	..
Massachusetts	..	..	..
Rhode Island	..	..	..
Connecticut	1	1	..
Middle Atlantic States			
New York	..	..	1
New Jersey	..	..	..
Pennsylvania	..	..	..
East North Central States			
Ohio	..	..	..
Indiana	..	1	..
Illinois	..	..	..
Michigan	..	..	..
Wisconsin	..	..	1
West North Central States			
Minnesota	..	..	..
Iowa	..	..	..
Missouri	..	..	..
North Dakota	..	..	..
South Dakota	..	..	..
Nebraska	..	..	3
Kansas	..	..	1
South Atlantic States			
Delaware	..	..	..
Maryland	..	..	..
District of Columbia	..	..	..
Virginia	..	..	3
West Virginia	..	..	..
North Carolina	..	..	..
South Carolina	..	..	..
Georgia	..	..	..
Florida	1	1	1
East South Central States			
Kentucky	..	..	..
Tennessee	1	1	..
Alabama	..	..	2
Mississippi	..	..	1
West South Central States			
Arkansas	..	..	..
Louisiana	..	..	2
Oklahoma	1	2	..
Texas	..	1	4
Mountain States			
Montana	..	..	..
Idaho	..	..	..
Wyoming	..	1	..
Colorado	2	3	1
New Mexico	..	..	..
Arizona	..	..	..
Utah	..	..	..
Nevada	..	..	..
Pacific States			
Washington	..	1	..
Oregon	..	..	..
California	1	3	11
Territories and Possessions			
Alaska	..	..	1
Hawaii	..	..	..
Puerto Rico	..	..	..
Total	7	15	32

FOREIGN

International Congress of the History of Medicine.—The 16th International Congress of the History of Medicine will take place at the School of Medicine of Montpellier (France) Sept. 22-28, under the general presidency of the dean of the faculty, Monsieur le doyen Giraud. Registrations will be accepted by Prof. Turchini, chairman of the committee of organization, Faculty of Medicine, Montpellier (Herault, France). Subjects on the agenda are:

The relations of the School of Montpellier with the medical institutions of other nations in course of the centuries.
The history and development of the hospital institutions.
Medical iconography in the seventeenth century.
The contribution of the new world to therapy.

Registration fees are 4000 francs for members of the International Society of the History of Medicine, 6000 francs for nonmembers, and 3500 francs for accompanying persons. The Comité d'orgaisation is now accepting titles of papers for presentation together with a short résumé.

Congress of Psychotherapy in Barcelona.—The fourth International Congress of Psychotherapy will be held Sept. 1-7, organized by the Sociedad Española de Medicina Psicosomatica y Psicoterapia, at the Palacio Nacional de Montjuich, Barcelona, Spain. The congress theme will be "Psychotherapy and Existential Analysis." Sections have been organized on cultural anthropology, the influence of oriental psychology, clinical psychology, psychodrama, hypnosis and relaxation methods, and other topics. Reports will be simultaneously translated into the four official languages: Spanish, English, French, and German. The program includes speakers from Switzerland, Cuba, Spain, the Netherlands, France, Austria, Germany, Israel, Peru, and the U. S. For information write the Secretary, International Congress of Psychotherapy, Cátedra de Psiquiatría de la Facultad de Medicina, Casanova, 143, Barcelona, Spain.

EXAMINATIONS AND LICENSURE

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES, INC.

Educational Council for Foreign Medical Graduates, Inc.: The American medical qualification examination to be given henceforth twice a year for foreign medical graduates. Medical Schools in the United States and Foreign Countries, Sept. 23. Final date for filing application is June 23. Executive Director, Dr. Dean F. Smiley, 1710 Orrington Ave., Evanston, Illinois.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 17-19. Sec., Dr. D. G. Gill, State Office Building, Montgomery 4.

ARIZONA:* *Examination and Reciprocity.* Phoenix, April 16-18. Exec. Sec., Mr. Robert Carpenter, 826 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, June 5-6. Sec., Dr. Joe Verser, Harrisburg.

California: *Written Examination.* San Francisco, June 16-19; Los Angeles, August 18-21; Sacramento, Oct. 20-23. *Oral Examination.* San Francisco, June 14; Los Angeles, August 16; San Francisco, November 15. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 15; Los Angeles, August 17; San Francisco, November 16. Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

Colorado:* *Examination and Reciprocity.* Denver, June 10-11. Exec. Sec., Mrs. Beulah H. Hudgens, 715 Republic Bldg., Denver 2.

Delaware: *Examination and Reciprocity.* Dover, July 8-10. Sec., Dr. Joseph S. McDaniel, Professional Bldg., Dover.

Florida:* *Examination.* Miami, June 29-July 1. Sec., Dr. Homer L. Pearson, 901 N. W. 17th St., Miami.

Georgia: *Examination and Reciprocity.* Atlanta and Augusta, June. Sec., Mr. C. L. Clifton, 224 State Capitol, Atlanta.

Idaho: *Examination.* Boise, July 14-16. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

Indiana: *Examination.* Indianapolis, June 18-20. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

Iowa:* *Examination.* Iowa City, June 16-18. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines 19.

Kansas:* *Examination.* Kansas City, June 13-14. Sec., Dr. F. J. Nash, New Brotherhood Bldg., Kansas City.

Louisiana: *Examination and Reciprocity.* New Orleans, June 5-7. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

Maryland: *Examination.* Baltimore, June 17-20. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore 1.

Massachusetts: *Examination.* Boston, July 15-18. Sec., Dr. Robert C. Cochrane, Room 37 State House, Boston.

Michigan:* *Examination.* Ann Arbor and Detroit, June 9-11. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

Minnesota:* *Examination.* Minneapolis, April 15-17. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

Missouri: *Examination.* St. Louis, May 30-31. Ex. Sec., Mr. John A. Hailey, Jefferson City.

Nebraska:* *Examination.* Omaha, June. Sec., Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

New Mexico:* *Examination and Reciprocity.* Santa Fe, May 19-20. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

New York: *Examination.* Albany, Buffalo, New York City and Syracuse, June 24-26. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

North Carolina: *Endorsement.* Asheville, May 5. *Examination.* Raleigh, June 16-19. *Endorsement.* Raleigh, June 17. Asst. Sec., Mrs. Louise J. McNeill, Professional Bldg., Raleigh.

North Dakota: *Examination.* Grand Forks, July 9-11. *Reciprocity.* Grand Forks, July 12. Sec., Dr. C. J. Glaspel, Grafton.

Ohio: *Examination.* June 19-21. Sec., Dr. H. M. Platter, 21 West Broad St., Columbus 15.

Oklahoma:* *Examination.* Oklahoma City, June 3-4. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: *Examination.* Philadelphia and Pittsburgh, July 8-10. Acting Sec., Mrs. Marguerite G. Steiner, Box 911, Harrisburg.

South Carolina: *Reciprocity.* Myrtle Beach, May 13; *Examination.* Columbia, June 24-25. Sec., Dr. H. E. Jervey, 1329 Blanding St., Columbia.

South Dakota:* *Examination.* Rapid City, August 12-13. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

Texas:* *Examination and Reciprocity.* Fort Worth, June 23-25. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

Utah: *Examination.* Salt Lake City, July 9-11. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

Virginia: *Examination.* Richmond, June 12-14. *Reciprocity.* Richmond, June 11. Address: Board of Medical Examiners, 631 First St., S. W., Roanoke.

Washington:* *Examination.* Seattle, July 14-16. Administrator, Mr. Thomas A. Carter, Capitol Bldg., Olympia.

West Virginia: *Examination and Reciprocity.* Charleston, July (date not set). Sec., Dr. N. H. Dyer, State Office Bldg., No. 5, Charleston.

Wisconsin:* *Endorsement.* Madison, April 25. *Examination.* Milwaukee, July 8-10. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., 1 West Wilson St., Madison.

Wyoming: *Examination and Reciprocity.* Cheyenne, June 2 and Oct. 6. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

Alaska:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

Guam: *Subject to Call.* Act. Sec., Dr. S. F. Provencher, Agana.

Hawaii: *Examination.* Honolulu, July 14-15. Sec., Dr. I. L. Tilden, 1029 Kapiolani St., Honolulu.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: *Examination.* Juneau, Nov. 4. Sec., Dr. R. Harrison Leer, Room 204, Alaska Office Bldg., Juneau.

Arkansas: *Examination.* Little Rock, May 5-6. Sec., Mr. S. C. Dellinger, Zoology Department, University of Arkansas, Fayetteville.

Colorado: *Examination and Endorsement.* Denver, May 7-8. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

Connecticut: *Examination and Endorsement.* New Haven, June 14. Exec. Asst., Mrs. Regina G. Brown, 258 Bradley St., New Haven 10.

District of Columbia: *Examination.* Washington, April 14-15. Deputy Director, Commission on Licensure, Mr. Paul Foley, 1740 Massachusetts Ave., N. W., Washington 6.

Florida: *Examination.* Miami, June 7. Sec., Mr. M. W. Emmel, Box 340, Gainesville.

Kansas: *Examination.* Kansas City, June 3-4. Sec., Dr. R. E. Stowell, University of Kansas School of Medicine, Kansas City 12.

New Mexico: *Examination.* Santa Fe, April 26. *Reciprocity.* Santa Fe, March 26. Sec., Mrs. Marguerite Cantrell, Box 1522, Santa Fe.

South Dakota: *Examination.* Vermillion, June 6-7. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

Rhode Island: *Endorsement.* Providence, April 30. *Examination.* Providence, May 14. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Texas: *Examination.* April 18-19, Austin, Galveston and Houston. Sec., Bro. Raphael Wilson, 407 Perry Brooks Bldg., Austin.

Wisconsin: *Examination.* Milwaukee, June 7. Sec., Mr. William H. Barber, 621 Ransom St., Ripon.

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*Basic Science Certificate required.

GOVERNMENT SERVICES

AIR FORCE

Space Medicine.—Academic rank as the world's first professor of space medicine has just been awarded to Dr. Hubertus Strughold at the Air Force School of Aviation Medicine. The school grants to teaching members of its staff the same academic status they would have at a comparable civilian institution. Dr. Strughold, who founded the school's department of space medicine 10 years ago, has been known until now as professor of aviation medicine. Renowned as the most eminent living authority on human flight in space, Dr. Strughold now serves as the school's advisor for research. He still lectures to student medical officers, however, on space medicine.

ARMY

New Medico-Dental Society in Italy.—The Southern European Task Force Medico-Dental Society opened a new point of contact for international exchange of medical knowledge on April 2, when 12 Italian physicians and dentists and SETAF medical and dental officers met at Camp Passalacqua, in Verona, to hear a talk by Col. H. Beecher Dierdorff on maxillofacial injuries. Colonel Dierdorff has been chief of oral surgery in several of America's largest Army hospitals. Capt. Kenneth Rowe is president of the society. Presiding at the meeting was Lieut. Col. George W. Grabiak, SETAF dental surgeon.

VETERANS ADMINISTRATION

Hospital News.—Dr. Oskar Diethelm, psychiatrist-in-chief, the New York Hospital (Payne Whitney Psychiatric Clinic), addressed the staff of the VA Hospital at Northport, N. Y., on March 25, on "The Concept of Regression in Schizophrenia."

PUBLIC HEALTH SERVICE

New Radiological Health Division.—Creation of a new division of radiological health in the Public Health Service was announced March 28 by Marion B. Folsom, secretary of the Department of Health, Education, and Welfare. The new division will provide technical assistance to state agencies in dealing with medical, industrial, and other activities involving public exposure to radiation, and it will also conduct research and training programs.

Ten years ago, the PHS radiation unit consisted of one physician and a secretary. Today, 51 persons and a budget of almost $400,000 are involved in radiation work. Under the new division, it is expected the program will expand to include a staff of 76 persons, with a budget of over $600,000, in fiscal year 1959. Chief of the new division will be Dr. Francis J. Weber, a career officer in the PHS and at present medical director of the department's Denver regional office, covering Colorado, Utah, Wyoming, Montana, and Idaho. The surgeon general recently announced the appointment of a National Advisory Committee on Radiation which, under the chairmanship of Dr. Russell H. Morgan, professor of radiology, Johns Hopkins University School of Medicine, held its first meeting on March 13.

Poliomyelitis Vaccination Urged.—Surgeon General Leroy E. Burney announced that revised estimates indicate that 48,500,000 persons in the susceptible age group, under 40 years of age, have not been vaccinated against poliomyelitis. The Salk vaccine was an important factor in the 85% reduction of paralytic cases over the past two years, but poliomyelitis comes in cycles. Even in prevaccine years, there have been periods of dramatic reductions. Epidemic years have always followed. Should the attack rate in 1958 prove to be comparable to that of 1952, 30,000 cases of poliomyelitis, a substantial number of them paralytic, could occur among those who have not been vaccinated. This potential toll of suffering and lifelong disability is unnecessary. The way to prevent it is simple: get vaccinated, and start now. Parents of pre-school-age children run a special risk because the attack rate of the disease is high among small children. If these children have been vaccinated, they themselves are protected against paralysis, but they can still harbor the virus and pass it on to their parents.

Personal.—Dr. Robert M. Farrier has been appointed assistant director of the National Institutes of Health Clinical Center, Bethesda, Md., succeeding Dr. Stuart M. Sessoms, now assistant director of the National Cancer Institute. Since 1954, Dr. Farrier has been on special assignments for the headquarters office of the Bureau of Medical Services of the Public Health Service.

NATIONAL SCIENCE FOUNDATION

Personal.—Arthur W. Martin, Ph.D., has been named program director for regulatory biology, National Science Foundation. He is on leave of absence from the University of Washington where he is chairman, department of zoology. During the current fiscal year, the foundation expects to award grants totaling more than a million dollars for basic research in this field, primarily to educational institutions in the United States. Dr. Martin has done research in cellular metabolism, muscle atrophy in mammals, and pharmacological actions of barbiturates and their antagonists.

DEATHS

Abbott, Melvin Dewey ⚕ Captain, U. S. Navy, retired, Pembroke, Ga.; born in Adrian, Mich., Nov. 6, 1899; Detroit College of Medicine and Surgery, 1926; appointed assistant surgeon in the medical corps of the U. S. Navy with the rank of lieutenant (jg) in June, 1925; assigned to the U. S. Naval Hospital, New York City, for internship; later served at the Naval Training Station, Hampton Roads, Va., at four Naval hospitals, on eight U. S. ships, and at various other Naval shore stations; attained the rank of lieutenant in 1930, lieutenant commander in 1938, commander in 1942, and captain, 1943; in 1954 while serving at the Navy Recruiting Station in Macon, was placed on the retired list of Naval officers after completing more than 29 years of active service; service member of the American Medical Association; fellow of the American College of Surgeons; served a residency at the Flower and Fifth Avenue Hospitals in New York City; died in the Bulloch County Hospital, Statesboro, Feb. 17, aged 58, of a wound received when shot by a caretaker.

Alexander, William Cobb, Clifton Hill, Mo.; Louisville (Ky.) and Hospital Medical College, 1908, died in the Woodland Hospital, Moberly, Feb. 15, aged 73.

Baker, Edwin Wilson, Fremont, Ohio; University of Buffalo School of Medicine, 1883; on the staff of the Memorial Hospital; died Feb. 21, aged 98, of heart disease and arteriosclerosis.

Ballou, De Forrest Jr., Linwood, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1913; served in the regular Army; veteran of World Wars I and II; formerly on the staff of the Veterans Administration Hospital in Castle Point, N. Y.; died in the Shore Memorial Hospital, Atlantic City, N. J., Feb. 13, aged 72.

Bentley, Frederick W., North Tonawanda, N. Y.; New York Homeopathic Medical College and Hospital, New York City, 1894, died in the DeGraff Memorial Hospital Feb. 23, aged 87, of gastric carcinoma and hepatic metastases.

Bicknell, George C. ⚕ Indian Head, Md.; Baltimore Medical College, 1904, associated with Physicians Memorial Hospital in La Plata; died in Prince Frederick Feb. 10, aged 77.

Blackmore, Thomas Albert ⚕ Windsor, Mo.; Missouri Medical College, St. Louis, 1898; died Jan. 26, aged 85, of injuries received in an automobile accident.

Boden, Leo Meyer ⚕ Buffalo; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1925; member of the American Academy of General Practice; died Feb. 13, aged 59, of heart disease.

Bond, Theron Blain, Geneva, N. Y.; University of Buffalo School of Medicine, 1912; member of the Medical Society of the State of New York; veteran of World War I; died in the Veterans Administration Hospital, Canandaigua, Jan. 30, aged 74.

Brown, Swan Wilmer, Cadillac, Mich.; Jefferson Medical College of Philadelphia, 1900; died in the Mercy Hospital Feb. 26, aged 91, of coronary occlusion.

Brown, Walter Earl ⚕ Pittsburgh; Jefferson Medical College of Philadelphia, 1911; on the staff of the Homestead (Pa.) Hospital, where he died Feb. 12, aged 72, of arteriosclerotic heart disease.

Buchheit, Rudolph George ⚕ Buffalo; University of Buffalo School of Medicine, 1928; member of the Association for Research in Ophthalmology; associated with Our Lady of Victory Hospital in Lackawanna and the Mercy Hospital; died Feb. 18, aged 56.

Burns, Francis John ⚕ Spokane, Wash.; Loyola University School of Medicine, Chicago, 1921; county coroner; veteran of World Wars I and II; associated with Deaconess and St. Luke's hospitals; died in the Sacred Heart Hospital Feb. 4, aged 65, of carcinoma of the lung.

Code, John Nicholas, Brightwaters, N. Y.; University College, Dublin, Ireland, 1944; member of the American Society of Anesthesiologists and the Medical Society of the State of New York; on the staff of the Southside Hospital and the Lakeside Hospital, where he died Feb. 20, aged 45, of a heart attack.

Conant, Edgar Francis ⚕ Denver; Columbian University Medical Department, Washington, D. C., 1894; died Feb. 7, aged 80, of coronary occlusion.

Cross, Frank Bethel ⚕ Brooklyn; born in 1879; Columbia University College of Physicians and Surgeons, New York City, 1900; clinical professor emeritus of medicine at State University of New York College of Medicine; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; past-president of the Brooklyn Society of Internal Medicine; emeritus chief of the medical staff and member of

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⚕ Indicates Member of the American Medical Association the board of managers, Methodist Hospital; consulting physician at St. John's Episcopal, Victory Memorial, Midwood, Bay Ridge, and Samaritan hospitals all in Brooklyn, St. Luke's Hospital in Newburgh, and John T. Mather Memorial Hospital in Port Jefferson, N. Y.; died in the Louden-Knickerbocker Hall, Amityville, N. Y., Feb. 26, aged 78, of coronary occlusion.

DeBonis, Domenico A. ⊕ West Hartford, Conn. (licensed in Connecticut in 1893); died in St. Francis Hospital, Hartford, Feb. 17, aged 93, of bronchopneumonia and arteriosclerotic heart disease.

Donchoo, J. Frank, Jackson, Miss.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; an associate member of the American Medical Association; for many years practiced in Washington, Pa., where he served on the staff of the Washington Hospital; died Feb. 8, aged 88.

Donnelly, James Gordon ⊕ San Francisco; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1912; service member of the American Medical Association; veteran of World Wars I and II; for many years manager of the Veterans Administration Hospital, Fort Miley; died in St. Mary's Hospital Feb. 18, aged 67, of occlusive coronary disease.

Draper, William Banford, Denver; McGill University Faculty of Medicine, Montreal, Que., Canada, 1924; professor of pharmacology at the University of Colorado School of Medicine; served in the Canadian Army during World War I; died in Tucson, Ariz., Feb. 18, aged 64, of cerebral hemorrhage.

Ewart, Thomas Alexander, Long Beach, Calif.; Michigan College of Medicine and Surgery, Detroit, 1901; formerly associated with the Indian Service; on the staffs of the Seaside Memorial, St. Mary's, and Community hospitals; died Feb. 18, aged 84, of congestive heart disease and arteriosclerosis.

Fordham, Henry Clendenin, Chapel Hill, N. C.; Harvard Medical School, Boston, 1953; service member of the American Medical Association; certified by the National Board of Medical Examiners; served in the medical corps of the U. S. Naval Reserve; resident, North Carolina Memorial Hospital; died Feb. 13, aged 28, of encephalitis.

Fowzer, Lloyd Robert, Milwaukee; College of Medicine and Surgery (Physico Medical) Chicago 1911; died Feb. 16, aged 68.

Furman, Richard B. ⊕ Sumter, S. C.; Medical College of the State of South Carolina, Charleston, 1889; died in the Twomey Hospital Feb. 22, aged 91, of arteriosclerotic heart disease, bronchopneumonia and acute gastroenteritis.

Goldfain, Samuel Joseph ⊕ Baton Rouge, La.; George Washington University School of Medicine, Washington, D. C., 1922; fellow of the American College of Surgeons; veteran of World War I; on the staffs of the Baton Rouge General Hospital and Our Lady of the Lake Hospital; died in Jackson Jan. 17, aged 58.

Haeberlin, John Benjamin ⊕ Chicago; Northwestern University Medical School, Chicago, 1900; fellow of the American College of Surgeons; at one time associate clinical professor of surgery at Loyola University School of Medicine; served on the staff of St. Bernard's Hospital; died Feb. 12, aged 81, of coronary insufficiency.

Hagen, Beatrice A. Todd, Zanesville, Ohio; University of Buffalo School of Medicine, 1900; served as secretary of the Muskingum County Academy of Medicine; for many years health commissioner of Muskingum County; died Feb. 13, aged 81.

Hannings, Herschel Victor, Martin, Tenn.; University of Tennessee Medical Department, Nashville, 1908; died in the Obion County Hospital in Union City, Dec. 26, aged 73.

Harvey, John King ⊕ Salina, Kan.; University of Kansas School of Medicine, Kansas City, Kan., 1908; associated with Asbury Hospital and St. John's Hospital, where he died Feb. 20, aged 76, of cerebrovascular occlusion.

Hendrickson, Clifford Wood, Bethel, Conn.; Long Island College Hospital, Brooklyn, 1901; an associate member of the American Medical Association; formerly practiced in New Rochelle, N. Y.; veteran of World War I; died in Danbury (Conn.) Hospital, Jan. 30, aged 79, of bronchopneumonia, following a fracture, and duodenal ulcer.

Holderith, Charles Peter ⊕ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1906; veteran of World War I; served as state representative; died Feb. 22, aged 76.

Hyer, Yeadon Mazyck, Darlington, S. C.; Medical College of South Carolina, Charleston, 1933; veteran of World War II; formerly health officer of Chester County, Hampton and Allendale Counties; associated with McLeod Infirmary in Florence, where he died Jan. 29, aged 50, of pneumonia.

Jenson, William Andrew ⊕ Chicago; Chicago College of Medicine and Surgery, 1912; associated with the Swedish Covenant Hospital, where he died Feb. 26, aged 78.

Johnson, Francis Bonneau ⊕ Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1903; specialist certified by the American Board of Pathology; fellow of the American College of Physicians; professor emeritus of clinical pathology at his alma mater; past-president of the South Carolina Medical Association and the Tri-State Medical Association of the Carolinas and Virginia; died Jan. 16, aged 76, of carcinoma of the prostate.

Johnson, Julius ⚕ Minneapolis; Minneapolis College Physicians and Surgeons, medical department of Hamline University, 1906; member of the American Psychiatric Association; served on the staffs of Swedish, St. Barnabas, Fairview, St. Andrew's, Deaconess, and Glenwood Hills hospitals; died Feb. 8, aged 80, of myocardial infarction.

Johnson, S. Lloyd ⚕ Catonsville, Md.; Johns Hopkins University School of Medicine, Baltimore, 1918; member of the American Academy of General Practice; first president of the Maryland Academy of General Practice; formerly on the faculty of the University of Maryland School of Medicine and College of Physicians and Surgeons; veteran of World War I; died in the Johns Hopkins Hospital, Baltimore, Feb. 4, aged 67, of acute leukemia.

Jordan, Saunders Robert, Carolina Beach, N. C.; Medical College of Virginia, Richmond, 1899; veteran of World War I; died Feb. 6, aged 84.

Joyce, Thomas Francis, Los Angeles; Bellevue Hospital Medical College, New York City, 1898; an associate member of the American Medical Association; served as medical superintendent of the Pacific Colony–State Narcotic Hospital in Spadra, Calif.; died Feb. 10, aged 84, of bilateral bronchopneumonia.

Kirby, Darwin ⚕ Champaign, Ill.; Northwestern University Medical School, Chicago, 1907; member of the Industrial Medical Association; fellow of the American College of Surgeons; past-president of the American Association of Railroad Surgeons; died in the Norbury Sanitarium in Jacksonville Feb. 15, aged 74, of coronary occlusion and general and cerebral arteriosclerosis.

Kotz, Jacob, Washington, D. C.; born Dec. 25, 1895; George Washington University School of Medicine, Washington, D. C., 1917; formerly clinical professor of obstetrics and gynecology at George Washington University School of Medicine; specialist certified by the American Board of Obstetrics and Gynecology; an associate member of the American Medical Association; fellow of the International College of Surgeons and the American College of Surgeons; veteran of World War I; served on the staffs of the George Washington, Sibley Memorial, and Prince Georges hospitals and Doctors Hospital, where he died Feb. 28, aged 62, of arteriosclerotic heart disease.

Landis, Robert K. ⚕ Nashville, Tenn.; (licensed in Tennessee in 1909); member of the American Academy of General Practice; on the staffs of the Nashville General Hospital and the Baptist Hospital, where he died Feb. 2, aged 73, of acute myocardial infarction.

Leonard, Ward Holmes ⚕ Kansas City, Mo.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; veteran of World War I; on the staff of the Trinity Hospital, where he died Jan. 30, aged 86, of myocardial infarction.

Lewis, George Everie ⚕ Lincoln, Neb.; University of Nebraska College of Medicine, Omaha, 1925; fellow of the International College of Surgeons; veteran of World War I; associated with St. Elizabeth's and Bryan Memorial hospitals; died in the Veterans Administration Hospital, Omaha, Feb. 7, aged 60, of cerebral thrombosis.

Lightner, Homer G., Ideal, Ga.; Atlanta College of Physicians and Surgeons, 1906; veteran of World War I; formerly associated with the Veterans Administration in Macon; died in Montezuma Feb. 8, aged 77, of a heart attack.

Linsey, Philip Robert ⚕ Cleveland; University of Wooster Medical Department, Cleveland, 1910; member of the American Academy of General Practice; associated with the Doctors Hospital in Cleveland Heights and Polyclinic Hospital; died Feb. 10, aged 71.

Logan, Jesse Robert ⚕ Evansville, Ind.; Indiana University School of Medicine, Indianapolis, 1927; veteran of World War II; member of the American Academy of General Practice; on the staffs of the Deaconess and St. Mary's hospitals; died Feb. 16, aged 57, of a malignant brain tumor.

Long, Felix Benjamin ⚕ Starkville, Miss.; University of Tennessee College of Medicine, Memphis, 1914; associated with the Felix Long Memorial Hospital; died in the Price and Black Hospital in Lamesa Feb. 6, aged 75, of coronary occlusion.

Lorenz, William Frederick ⚕ Madison, Wis.; born in New York City Feb. 15, 1882; University and Bellevue Hospital Medical College, New York City, 1903; emeritus professor of neuropsychiatry at the University of Wisconsin Medical School; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the Central Neuropsychiatric Association; fellow of the American College of Physicians; veteran of the Spanish–American War; served during World War I and received the Distinguished Service Medal; engaged as special expert in research investigation of pellagra for the U. S. Public Health Service, 1914-1915; past-president of the Wisconsin State Board of Control, Madison Police and Fire Commission, and the Wisconsin Rehabilitation Board; formerly director of the Wisconsin Psychiatric Institute and president of the staff of St. Mary's Hospital; died Feb. 18, aged 76, of heart disease.

Love, Luther Samuel ⊛ Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1909; associated with the Central State Hospital; died Feb. 10, aged 76.

Love, Samuel Glenn, Asheville, N. C.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1914; died Feb. 14, aged 66.

McCool, Joseph Letelle, Monrovia, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; an associate member of the American Medical Association; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; formerly on the faculty of the University of California School of Medicine; at one time practiced in Philadelphia and Portland, Ore.; died Feb. 12, aged 78, of embolism.

McCulloch, John Max ⊛ Maryville, Tenn.; University of Tennessee College of Medicine, Memphis, 1935; on the staff of the Blount Memorial Hospital, where he died Feb. 6, aged 51, of acute posterior myocardial infarction.

McElhinney, John Samuel, Buffalo, Mo.; Eclectic Medical University, Kansas City, Mo., 1906; died in Lebanon Dec. 16, aged 91.

McGuire, Bennet Joseph ⊛ Pittston, Pa.; University of Pittsburgh School of Medicine, 1925; formerly an officer in the medical corps of the U. S. Army Reserve; member of the Radiological Society of North America; past-vice-president of the Pennsylvania Radiological Society; for many years member of the board of health of West Pittston; associated with Mercy Hospital in Wilkes-Barre and the Pittston Hospital; vice-president and for many years member of the board of managers of Luzerne County Industrial School at Kis-Lyn; died in the Veterans Administration Hospital, Wilkes-Barre, Feb. 18, aged 62, of cancer.

Mair, William Lewis, Detroit; McGill University Faculty of Medicine, Montreal, Que., Canada, 1906; died in the Public Hospital, Clinton, Ont., Canada, Feb. 11, aged 76, of cerebral thrombosis.

Margolin, Berthe ⊛ Tulsa, Okla.; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1917; served on the staff of St. John's Hospital; died Feb. 1, aged 65, of injuries received when struck by her automobile.

Meek, Marcus L., Abington, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1895; died in the Reid Memorial Hospital, Richmond, Feb. 10, aged 101, of arteriosclerotic heart disease.

Mendel, James Harold ⊛ Miami, Fla.; born in Wheeling, W. Va., Aug. 17, 1894; Jefferson Medical College of Philadelphia, 1918; served on the faculty of his alma mater; at one time practiced in Philadelphia, where he was associated with Jefferson Hospital, Germantown Dispensary and Hospital, and the Memorial Hospital; specialist certified by the American Board of Otolaryngology; in 1935 was awarded a Bronze Medal by the American Medical Association for his exhibit on ear drums and their interpretation; member of the American Academy of Ophthalmology and Otolaryngology; on the staff of the Doctors' Hospital in Coral Gables; for many years on the staff of the Mercy Hospital; died in Coral Gables, Feb. 5, aged 63, of myocardial infarction.

Miller, Robert Carlysle, Gastonia, N. C.; North Carolina Medical College, Charlotte, 1909; member of the Medical Society of the State of North Carolina; past-president of the Gaston County Medical Society; associated with Gaston Memorial, Garrison General, and Gaston County Negro hospitals; died Feb. 4, aged 72, of cerebral hemorrhage.

Mixsell, Harold Ruckman ⊛ New York City; Columbia University College of Physicians and Surgeons, New York City, 1910; served on the faculty of the University and Bellevue Hospital Medical College; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; veteran of World War I; consulting pediatrician, Community Hospital in Glen Cove, St. Luke's, Woman's, and Beekman-Downtown hospitals; formerly editor of the *Archives of Pediatrics;* died in the New York Hospital Feb. 13, aged 72.

Moore, John Frederick ⊛ Nashville, Tenn.; George Washington University School of Medicine, Washington, D. C., 1927; retired from the Veterans Administration Aug. 11, 1952; died Feb. 9, aged 58, of cerebral thrombosis.

Moore, John Milton, Chicago; McGill University Faculty of Medicine, Montreal, Que., Canada, 1893; died Feb. 2, aged 89, of arteriosclerotic heart disease, generalized arteriosclerosis, and hypertension.

Mullen, James Emmett ⊛ Toledo, Ohio; Loyola University School of Medicine, Chicago, 1936; member of the Industrial Medical Association; fellow of the American College of Surgeons; associated with St. Charles and Mercy hospitals; died Feb. 8, aged 49, of a heart attack.

Zahn, Benjamin, J., Oak Park, Ill.; Chicago Homeopathic Medical College, 1900; died in the Oak Park Hospital Feb. 10, aged 89, of encephalomalacia and cerebral arteriosclerosis, general arteriosclerosis, and arteriosclerotic heart disease.

FOREIGN LETTERS

AUSTRIA

Post-traumatic Subdural Effusions.—At the meeting of the Society of Physicians in Vienna on Feb. 7, Dr. K. Holub said that colorless or yellowish subdural effusions (hygroma) produce symptoms resembling those of subdural hematoma. In less severe cases the patients complain of headache, vertigo, and unsteady gait but show no neurological findings. These patients are often treated on the basis of an erroneous diagnosis such as post-traumatic neurosis or compensation neurosis. It is important to carry out all the necessary diagnostic examinations, since an operation performed in time often cures these patients.

Passage of Poliomyelitis Virus Through Filters.—At the same meeting Drs. W. Auerswald and J. Klima said that accidents associated with poliomyelitis vaccine in 1955 were due to the presence of virus aggregates in the vaccine. Previously Syverton had demonstrated the infectivity of the tissue culture noncytopathogenic vaccine in cortisone-treated monkeys, and Taylor observed in the vaccine sediment after ultracentrifugation aggregates of virus. Therefore a second filtration of the single-strain virus pools three days after complete inactivation was prescribed as a minimum requirement. It became evident, however, that filtration induced loss of antigenicity. Studies on the behavior of polioviruses during filtration were formerly made on active virus which could be titrated on the tissue culture, but it is doubtful that results obtained with active virus can be compared with those of the formaldehyde-treated virus interacting with filters. The author therefore modified the method Sharp used with influenza virus to evaluate directly the particle numbers of the virus suspension before and after filtration. The virus suspension is ultracentrifuged at 26,000 rpm in an analytical cell, quantitatively on the agar-coated bottom. After fixation the virus is transferred to a collodion replica and the particle number is evaluated in the electron microscope. By means of controls with the supernatant fluid it was shown that all of the virus had been recovered. In this way the selective properties of a filter can be evaluated in terms of lost particles. In these experiments it was further possible to obtain pictures of aggregates of poliovirus contained in the virus suspension before filtration while the same suspension after filtration was free from aggregates. This way of direct observation may improve control measures during vaccine production and enhance the safety and antigenicity of the finished product.

Epithelioid Cell Reaction.—At a meeting of the Society of Physicians on Jan. 31, Dr. St. Wuketich reported on histological examinations made on 489 patients who were operated on for carcinoma. The tissues in 29 of these revealed an epithelioid cell reaction of the regional lymph nodes. This reaction was demonstrated in the lymph nodes with and without cancer. The two main types of epithelioid cell reactions include the small foci of epithelioid cell proliferation and the granulomatous epithelioid cell proliferation with extensive foci. The inflammatory changes of the lymph node in an epithelioid cell proliferation with a small focus is almost always associated with the presence of reticulosis of the sinuses and with an increased activity of the germ centers and are similar to those seen in patients with subacute cervical and nuchal lymphadenitis. The picture of the epithelioid cell proliferation could not be differentiated with certainty from the epithelioid tuberculosis and Boeck's sarcoid. The epithelioid cell lymph node reaction is particularly present in patients with regressive carcinomatous changes after x-ray treatment and is initiated by the disintegration products of the tissues of the tumor.

Pelvic Lymph Nodes.—At the meeting of the society of Gynecologists and Obstetricians in January in Vienna, Dr. G. Reiffenstuhl said that the efferent lymph vessels and the lymph nodes of the pelvis were made visible in cadavers of newborn girls by the injection of a dye, and after an adequate fixation were examined under a dissecting microscope. Because the nomenclature of the pelvic lymph nodes is not uniform and has been changed repeatedly, the proposal was made to name the nodes according to their position with respect to the blood vessels, so that their names would designate their approximate topography. The regional lymph nodes of the uterine cervix are situated along and behind the large parietal blood vessels, starting at the infrapiriform foramen and extending to the aorta. The pubogluteal lymph nodes are situated behind the large blood vessels in the area of the spina ischiadica and can be reached only with difficulty. These studies revealed that the lymphatic system of the pelvis consists of a widespread

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The items in these letters are contributed by regular correspondents in the various foreign countries.

network. Because of the number of regional lymph nodes, cervical cancers may metastasize through a great variety of pathways.

Cancer of the Uterine Cervix.—At the same meeting Dr. H. Knaus said that the high death rate from carcinoma of the uterine cervix presented a complex problem. Although the operative mortality has decreased, two serious problems remain, namely, postoperative urethral fistula and recurrence in the regional lymph nodes. These complications may be prevented, however, by using the best operative technique. In the speaker's series of 117 radical operations (85 with Wertheim's and 32 with Schauta's method) only one woman died of a postoperative collapse of the lung. After a Wertheim's operation, a urethral fistula occurred in only one patient. In this patient exposure of the urethra in an already carcinomatous environment proved very difficult. This fistula was treated three months after the radical operation by implantation into the bladder, and the patient was cured of the fistula and carcinoma. The operation was performed in 1950 and the patient is still alive and well. The radical operation, including removal of the regional lymph nodes in 59 patients, revealed involvement of the lymph nodes in 19. Of the 116 patients who survived the operation, 24 died later (17 after Wertheim's and 7 after Schauta's operation). Of 55 who were operated on in the years from 1950 to 1953 (36 using Wertheim's and 19 using Schauta's technique) 40 appear to be permanently cured (25 after Wertheim's and 15 after Schauta's operation).

BRAZIL

Leprosy and Tuberculosis.—The results of the tuberculin and lepromin tests, carried out in preventoriums among children of persons with leprosy who consequently had been exposed to this disease lead Dr. N. S. Campos and co-workers (*International Journal of Leprosy*) to conclude that a state of specific resistance or immunity to tuberculosis due to leprous infection and a state of cross resistance due to tuberculous infection exist. Some of these leprosy contacts were lepromin-positive and had specific resistance, cross resistance, or both. They might appear to be healthy, or they might have lesions of the tuberculoid type of the disease. Others were lepromin-negative. They too might appear to be healthy, or they might have lesions of the indeterminate or lepromatous forms of the disease. The incidence of leprosy among close contacts was found to be much higher than is indicated by current epidemiological data. Correlation of the tuberculin and lepromin reactions led to an orientation of the criteria of surveillance of these children in preventoriums. Most attention should be given, first, to the lepromin-negative and tuberculin-positive children, and, next, to those who are negative to both lepromin and tuberculin. The high frequency of positive lepromin reactions in those without evident manifestations of leprosy and the high incidence of tuberculoid leprosy (nodular and sarcoidal) among the close contacts of patients with open forms of the disease suggested the existence of the lymph node complex without clinical manifestations, and that those manifestations, by their own characteristics, corresponded to the initial or inoculation lesion.

Blood Groups and Gastric Lesions.—Leite and Goffi (*Revista paulista de medicina*, vol. 52, January 1958) found the following blood group distribution in 124 patients with gastroduodenal ulcer, 98 with gastric carcinoma, and 1,818 unselected blood donors:

Blood Group	Gastric Carcinoma %	Peptic Ulcer, %	Unselected Blood Donors, %
A	55.0	35.5	38.7
B	5.1	9.7	10.1
O	34.8	49.1	47.7
AB	5.1	5.7	3.5

The authors concluded that there was a significant increase in the frequency of group A and a decrease of group O among patients with gastric carcinoma, and that there was no significant difference in the distribution of ABO blood groups among patients with peptic ulcer. This could be explained either through carcinogenic action by gene A, or through a protective action by gene O.

Mega-esophagus and Trypanosomiasis.—Rezende and Rassi (*O Hospital*, vol. 53, January, 1958) found that the endemic mega-esophagus and megacolon which occur in certain areas of Brazil are definitely caused by Trypanosoma cruzi. The complement fixation test for Brazilian trypanosomiasis was positive in 89% of 170 unselected patients with mega-esophagus and in 68.6% of 277 with heart disease believed to be infected with T. cruzi. In 126 unselected patients with mega-esophagus, 50% showed signs of heart disease. Among 175 patients with chronic trypanosomal cardiopathy, 27.9% showed evidence of esophageal involvement. The authors concluded that the esophagus, when affected by trypanosomiasis, reveals the diagnosis much earlier than the heart. The proportion of males to females was 1.7:1 among those with trypanosomal cardiopathy; 2:1 among those with mega-esophagus; and 2.3:1 among those with associated cardiopathy and mega-esophagus.

Carcinoma of Uterine Cervix.—J. C. G. da Silveira (*Revista de gynecologica e d'obstetricia*, vol. 52, January, 1958) lists the following situations in the diagnosis of noninvasive carcinoma of uterine cervix in which conservative treatment could permit the extension of the lesions: (1) endocervical ascension or glandular penetration; (2) ectocervical extension of carcinoma in situ beyond the habitual limits of vaginal section in the amputation or the conization of the cervix; (3) coexistence of an invasive carcinoma below the area of carcinoma in situ; and (4) precocious lymphatic metastasis of a superficial, apparently intraepithelial lesion. In any of these situations, pure excision of the cervix or total hysterectomy, conservative of ovaries and vagina, could result in disaster. In such an operation there is always the possibility of leaving areas of carcinoma in situ which could become invasive or of overlooking the present invasion or the precocious ganglional metastasis that would require radical hysterectomy with lymphadenectomy.

FINLAND

Adiposis Dolorosa.—According to Kirpila and Ripatti (*Nordisk medicin,* March 6, 1958) adiposis dolorosa is fairly common. In most of their series of 27 women with this disease, the fatty tumors had dominated the clinical picture by virtue of the pain they provoked, and in several cases they were the patients' sole complaint, although the patients had originally been sent to hospital as rheumatics. All of these women were very fat, their weights ranging from 57 to 92 kg. (125 to 202 lb.). Their ages ranged from 41 to 56 years. Their concomitant articular rheumatism was usually mild. The sedimentation rate was only slightly raised, the mean being lower for these patients than for rheumatics in general. Though a lookout was kept for hormonal disturbances, with special reference to the thyroid, there was only one case of thyroid adenoma.

Laboratory tests did not confirm the clinical impression of thyroid deficiency in two patients. Several patients showed well-marked neurasthenia. The tumors often showed a symmetrical distribution, being found on the inner side of the knee in many cases in the form of painful infiltrations of fat. Five patients also had such tumors above and below the knees. The buttocks and lumbar regions were also involved in several patients. The size of the tumors ranged from that of a cherry to that of a clenched fist. Adiposis dolorosa should not be diagnosed when no replica can be found elsewhere to single painful infiltration. All the patients in this series were given restricted diets and a thyroid preparation, but, since the cause of the disease is still unknown, it is not surprising that the treatment was often disappointing. Roentgen treatment gave some relief, and so did the removal of small and strictly limited tumors in three patients.

Myocardial Infarction.—Between 1952 and 1956 a hospital in Åbo discharged as convalescents 370 patients who had been treated for acute cardiac infarction. Their subsequent fate from six months to five years after discharge was reported by Dr. E. Iisalo and co-workers (*Nordisk medicin,* Feb. 13, 1958). Of the 87 patients who died since discharge, death was due to some cardiovascular disease in 81 and was sudden in 76 of these. Five deaths were due to apoplexy. There were 41 patients who were not traced. The remaining 242 patients formed the basis of the study. Of these, 95 (40%) were unable to resume their previous occupations. The remaining 60% had returned to regular work from three to six months after discharge. The high rate of invalidism compares unfavorably with the corresponding rate reported by earlier observers and may reflect the comparatively advanced age of the Finnish patients. In 54 cases an electrocardiogram characteristic of cardiac infarction had become normal since discharge. They included 35 patients who were fit for work on reexamination. This high recovery rate after an alarming electrocardiogram at the time of an acute infarction suggests that this test may often fail to reveal the dynamic capacity of the heart to react to the demands made on it. Many in need of digitalis treatment did not receive it, and the follow-up examination showed that it had often not even approximately achieved the results to be expected of it when it was given.

MEXICO

El Medico.—In April Mexico's largest independent medical publication, *El Medico,* celebrated its seventh anniversary. All of Mexico's approximately 15,000 physicians receive this journal monthly. In addition to the Mexican issue, the editor prepares special limited editions for Venezuela, Columbia, Ecuador, and all Central American countries. This medical periodical comes closest to THE JOURNAL of the American Medical Association but since Mexico has no official professional organization, *El Medico* fights for economic, scientific, cultural, and social benefits for physicians. Recent issues to all countries have reprinted the new A. M. A. Code of Ethics for the benefit of 27,000 Latin American physicians. One newly developed section of *El Medico* is the section on practical medicine. Here little known technical procedures such as blood typing are discussed.

UNITED KINGDOM

Unidentified Respiratory Disease of Children.—An outbreak of respiratory disease, the cause of which is unknown, occurred in London and Birmingham. It was not due to any type of known influenza virus, and laboratory investigations which are proceeding have so far failed to find a cause. The Princess Louise Kensington Hospital for Children, London, recently admitted 104 such patients, and although at the time there was an increased incidence of respiratory illness in London, the patients in this outbreak differed with respect to severity of illness and clinical features from those seen in other parts of the city. There was a history of rhinorrhea and sneezing for three to five days, sometimes with a cough, followed by noisy breathing and an increased respiratory rate (between 40 and 96 per minute, and in some up to 140 per minute). The children were pale and seemed to be in shock. Those under three months old were often cyanosed, with tachycardia, with pulse rate of 190 per minute. The breath sounds were harsh, and fine widespread rales developed later. A white frothy secretion was present in the mouth and pharynx, often requiring aspiration. Older children had a temperature varying from 100 to 105 F. (37.8 to 40.6 C), but younger children were afebrile.

The total leukocyte count varied from 6,000 to 15,000 with no significant disturbance of the ratio of polymorphonuclear cells to lymphocytes. No specific pathogens were isolated from the nose or throat. The sedimentation rate was raised in half the patients. Chest roentgenograms showed increased density, particularly in the lower lobes, and in a high proportion there was evidence of collapse-consolidation. Radiologic follow-up showed that these lesions resolved fairly rapidly. Half the patients required treatment in an oxygen tent, with an oxygen content of 80% and a humidity of 70 to 80%. Six children required digitalization for heart failure. Antibiotics and sulfonamides were given, but they were of little value, except in the prevention of secondary infection. Once the acute stage of respiratory infection was over, recovery was rapid. Two children died, however, from the illness.

Hypoglycemic Sulfonylureas.—There is still speculation on the precise mode of action of tolbutamide and carbutamide. Weaver and co-workers (*Brit. M. J.* 1:425, 1958) made investigations suggesting that tolbutamide does not act by increasing the effective level of insulin in the blood, as some observers have supposed. They examined the arteriovenous (A-V) glucose difference after an oral dose of 3 Gm. of tolbutamide in 10 patients with diabetes of recent onset not controlled by diet. A simultaneous estimation of the insulin-like activity of the serums was also made using the rat diaphragm technique before and after the administration of the drug. In addition studies were made to determine the effect of tolbutamide on the rate of disappearance of insulin labeled with I^{131} from the plasma of normal rabbits. The A-V glucose difference is an index of peripheral glucose uptake, if the peripheral blood flow remains unchanged and the arterial glucose level is constant. It was assumed that they remained so in these patients. Since no change in the A-V glucose difference was found this was taken as evidence that tolbutamide does not increase the uptake of glucose by the peripheral tissues. Examination of the insulin-like activity of the serum by the rat diaphragm method revealed no change in this activity after the administration of tolbutamide, and no difference was found in the rate of disappearance of intravenously administered radioiodine (I^{131}) from the plasma of normal rabbits after the intravenous injection of tolbutamide. These studies suggest that tolbutamide does not produce its hypoglycemic action by increasing the level of insulin in the tissues and so promoting the peripheral utilization of glucose.

Heat Stroke from a Turkish Bath.—Stoddart (*Brit. M. J.* 1:443, 1958) reports that a woman of 57 w admitted unconscious to hospital after having take a Turkish bath for 40 minutes at a temperature o 100 F (37.8 C). She appeared to be asleep in t bath but could not be roused and was sent by ambulance to hospital about two hours after entering the bath. Her rectal temperature was 107 F. (41.7 C), pulse rate 90, and blood pressure 90/50 mm. Hg. Her pupils were widely dilated, she did not respond to painful stimuli, reflexes were generally depressed, the plantar response was flexor, and there was marked opisthotonos. A diagnosis of heat stroke was made. She was given 25 mg. of chlorpromazine intramuscularly to depress the heat-regulating center and discourage shivering, and her temperature was further reduced by wet sheets and ice packs. There was no evidence of a neurological or cerebral vascular lesion. The patient developed generalized epileptiform convulsions, which were controlled by intramuscular injections of phenobarbital. Consciousness returned after seven hours, and she was discharged from the hospital on the fifth day. A follow-up showed no mental or neurological impairment.

Estimation of Blood Loss in Melena.—When erythrocytes labeled with radioactive chromium are introduced into the stomach or duodenum more than 90% of the chromium can be recovered in the feces. Jones (*Brit. M. J.* 1:493, 1958) has quantitatively estimated blood loss in the stools by labeling the subject's red blood cells with radioactive chromium (Cr^{51}), reinjecting them into the circulation, and subsequently estimating the Cr^{51} content of the stools with a Geiger-Müller counter. Six anemic patients known to be losing red blood cells in the stools were studied. The patient's own erythrocytes were labeled with about 100 μc of Cr^{51}, using Cr^{51} with a specific activity of 10 to 30 μc per mcg. of chromium. The labeled erythrocytes were then injected intravenously and the loss of Cr^{51} in the stools estimated. The rate of loss of Cr^{51} from the blood stream was increased beyond the normal figure, based on red blood cell survival estimates, and this was almost completely accounted for by the amount of Cr^{51} lost in the stools. The amount of Cr^{51} in the stools did not completely account for the rate of loss of Cr^{51} from the blood stream, indicating that some Cr^{51} is reabsorbed from the gastrointestinal tract but is not reutilized. Thus the Cr^{51} method slightly underestimates the amount of blood lost in the stools. In two control subjects known not to be bleeding into the gastrointestinal tract, the amount of Cr^{51} excreted in the stools following the intravenous injection of cells labeled with Cr^{51} was very small, being equivalent to 0.1 to 0.2 ml. of red blood cells daily. Because of this slight excretion the daily loss of blood in the stools must be more than 1 ml. before it can be detected by this tracer method.

Advanced Mammary Cancer.—Hypophysectomy causes improvement in 50 to 67% of patients with advanced mammary cancer, but there is usually a hypophyseal remnant, as complete extirpation can never be certain. Edelstyn and co-workers (*Lancet* 1:462, 1958) described a method for complete destruction of the pituitary by combining surgical removal with subsequent irradiation of the pituitary fossa with yttrium-90 oxide. Hypophysectomy is accomplished by the right transfrontal route, and when as much of the gland as possible has been removed and hemostasis secured, the fossa is packed with 7.5 to 10.0 mc of radioactive yttrium (Y^{90}) oxide mixed with dental impression wax. A wax pellet is rolled between two thick flat pieces of Perspex into a cylindrical shape and loaded into a piece of glass tubing, 30 cm. long and 0.5 cm. in internal diameter, which is fitted with a metal plunger so that the wax can be placed in the pituitary fossa. Great care is needed to prevent radioactive contamination of operating room personnel. Contaminated instruments are stored until they become inactive. Cortisone is given to the patients starting two days before the operation and treatment with thyroid extract is started about a month later.

Twenty-five patients have been so treated. Five died postoperatively, and of the survivors 16 have shown objective evidence of remission. Complications include major damage to the optic nerve in two patients and third cranial nerve lesions in four, probably due to forcing of the wax through the lateral wall of the fossa. Thyroid function was depressed in all patients who were well enough to be examined, and only 1 patient in 19 showed evidence of estrogenic activity, as judged by vaginal cytology. Autopsy was performed on three of the five patients that died, and there was evidence in two of them of still viable pituitary tissue.

Single Massive Doses of Penicillin.—Joseph (*Brit. M. J.* 1:487, 1958) compared the results of using single massive doses of penicillin for the treatment of acute lower respiratory infection in children with those of continuous therapy. The diagnosis was based on radiologic appearances as well as on physical signs. A single dose of 0.2 to 0.5 Gm. of sodium penicillin was given intramuscularly to 52 children, most of whom received in addition 0.3 Gm. of sulfadimidine per kilogram of body weight. The 54 children in the control group were given sodium penicillin every 6 or 12 hours in the standard dosage and 0.15 to 0.2 Gm. of sulfadimidine per kilogram per 24 hours, administered every 6 hours in divided doses. Treatment was continued in this group for at least five days. Comparison of the effectiveness of the two forms of treatment was based on the successes, failures, relapses, and complications. In addition the effect of treatment was observed on the fall in temperature, pulse, and respiratory rates; the rate of disappearance of physical and radiologic signs; and the length of stay in hospital. On these criteria the results obtained in the children receiving a single massive dose of penicillin were as good as those in children under standard continuous penicillin treatment. In children particularly, 1 injection of penicillin compared with 20 or more is an advantage. Apart from pain and discomfort, all the hazards associated with injections given in the hospital are avoided. the time of the nursing staff is saved, and patients are not disturbed in their sleep for injections.

Extracellular Water in Epilepsy.—The experimental production of convulsions by overhydration and their control by dehydration is well known. A dietary regimen involving dehydration has also been used with some success in the control of epilepsy with improvement in the electroencephalogram. Olbrich and co-workers (*Brit. M. J.* 1:500, 1958) investigated the relation between the distribution of extracellular water and total body water in epileptic and nonepileptic subjects. Eighteen epileptic males, with a duration of disease of 2.5 to 40 years, and 38 nonepileptic males were studied. The subjects were prepared for the test by being given a low-protein diet and ample fluid the day before. The total body water was measured by the urea method of McCance and Widdowson, but no significant difference was found in the values for the two groups. There was, however, a significant difference between the absolute values for extracellular water, measured by the sodium thiosulfate method, the amount in epileptics being 12.5 ± 3.1 liters, and in normal subjects 11.3 ± 1.76 liters. When the ratio of extracellular water to total body water expressed as a percentage was compared in the two groups the significance of the difference between them became more evident. This ratio was 2.9 ± 5.1 in the former and 25.3 ± 3.4 in the latter group. When the epileptics were classified according to frequency of the fits, those with the greatest frequency had the highest ratio of extracellular water to total body water. The average total sodium in the extracellular space was also greater in the epileptics.

As all the epileptics were investigated in the interval between attacks, the results suggest that an increase of extracellular fluid is always present in epileptics and that it is this that predisposes them to seizures. The beneficial effects reported of treatment by starvation, dehydration, ion exchange resins, and acetazolamide may depend on loss of fluid and sodium from the extracellular space. Restriction of sodium in epileptics would be rational treatment, according to these observations.

Army Medical Museum.—The Royal Army Medical Corps Historical Museum at Crookham houses a collection that is mainly for the nonspecialist. No effort has been made to duplicate the purely technical collections that already exist. This group of apparatus, models, plaques, letters, drawings, photographs, standards, and medals illustrates brilliantly the development of the army medical services from the time of the Peninsular War, in which the Duke of Wellington had small medical resources at his command, to the present. The collection reveals doctors, in war and in peace, as great collectors. The trophies range from a Russian drum won at Sebastopol to a Coptic cross collected by a surgeon in Lord Napier's Abyssinian Campaign of 1868.

Parking Problems.—The St. Marylebone Borough Council in London has asked the Minister of Transport and Civil Aviation to ban parking in an area of London in the vicinity of Oxford Street except at parking places where a charge by parking meters would be made. Four local physicians and the British Medical Association were among the objectors and, as reported in the *British Medical Journal* of Feb. 8, attention was drawn to the difficulties of doctors in parking and to the fact that in some cases the difficulty was so great that doctors had been forced to refuse to take some people as patients. It was pointed out how difficult it would make the life of a general practitioner who must have his car available at all times. It was suggested that exemption from payment of essential persons such as doctors and midwives on duty should be arranged.

Marriage and Divorce 1956.—The Registrar General's Statistical Review of England and Wales for the year 1956 reported that in 1956 there were 352,944 marriages, giving a rate of 15.8 persons marrying per 1,000 of population; 120 of the men and 2,681 of the women were under 17 at marriage; and 5 men, though no women, were over 90. The five men were all widowers. The commonest age for men to get married was 23 and for women 21. There is a tendency for people to marry younger than they did 50 years ago, and widows and widowers are much more likely to remarry than they were 50 years ago. Marriages dissolved by divorce in 1956 numbered 25,718 and by annulment 547. These figures are respectively about six times and three times the comparable figures for the 1930's. The figure for divorces was the lowest since the end of World War II. The commonest age for divorce to take place is 30 to 34 for both husbands and wives, and 10 to 14 years is the commonest duration of those marriages which end in divorce. Of those couples who were divorced, the largest number (8,934) had no children, and the next largest number (8,212) had only one child. In 188 cases of divorce there were seven or more children of the marriage.

Bodies for Dissection.—The minimum number of bodies required each year for dissection is 622. In the last two years more than this number has been supplied, but the distribution is variable. The medical schools seriously short of such bodies are those at Cambridge, Newcastle, and Glasgow. For the last two years the supply in London has exceeded the 10-year average of 220, while in the provinces and Scotland it has been below the 10-year averages of 328 and 112 respectively. Last year bequested bodies comprised 70% of the London supply, 44% of the provincial supply, but only 15% of the Scottish supply, and of the total number of bodies available 48% were bequests.

CORRESPONDENCE

FRAUDULENT SECURITIES PRACTICES

To the Editor:—During the course of various investigations conducted by the United States Securities and Exchange Commission, it has been reported that a considerable number of the members of the medical profession have been victimized by high-pressure telephone salesmen who have induced doctors, as well as members of other professional groups, to purchase securities of no value or dubious value.

As a result of this nefarious conduct on the part of these salesmen, the New York State Attorney General and the United States Securities and Exchange Commission developed and published a 10-point guide to alert the public against fraudulent securities practices. Notwithstanding the dissemination of the information and advice contained in a public pronouncement, there have been a mounting number of complaints brought to our attention concerning the continued activities of unscrupulous stock salesmen.

The Securities and Exchange Commission News Digest, Nov. 26, 1956, covers this subject matter. We believe that it will be an effective guide for the members of the medical profession in avoiding the pitfalls involved in the purchase of securities from unknown sources.

New York State Attorney General Jacob K. Javitz and the U. S. Securities and Exchange Commission, jointly announced today that they have agreed upon a basic 10-Point Guide for the public, to furnish a warning against fraudulent securities practices.

Among those cooperating with the Attorney General and the Commission in developing this 10-Point Guide were representatives of the New York Stock Exchange, American Stock Exchange, National Association of Securities Dealers, Association of Stock Exchange Member Firms, Investment Bankers Association of America and the Better Business Bureau of New York City, which originally met on September 28, 1956. This meeting was called by Mr. Javitz and Mr. Paul Windels, Jr., New York Regional Administrator of the Securities and Exchange Commission.

Because of the mounting number of complaints being received by law enforcement agencies involving unscrupulous stock operators, it was felt that a combined effort supplementing the continuing activities of the cooperating organizations to warn the public of the pitfalls involved in buying securities from unknown sources must be made.

"Too many people have fallen prey to unknown, high-pressure telephone salesmen who have peddled securities of no value or dubious value," Mr. Javitz and Mr. Windels declared. "With the publication of this 10-Point Guide," they added, "we hope to provide the public with a simple but effective guide to saving themselves from falling for sucker bait."

The 10-Point Guide is as follows:

1. Think before buying.
2. Deal only with a securities firm which you know.
3. Be skeptical of securities offered on the telephone from any firm or salesman you do not know.
4. Guard against all high pressure sales.
5. Beware of promises of quick spectacular prices rises.
6. Be sure you understand the risk of loss as well as the prospect of gain.
7. Get the facts—do not buy on tips or rumors.
8. Request the person offering securities over the phone to mail you written information about the corporation, its operations, net profit, management, financial position and future prospects. Save all such information for future reference.
9. If you do not understand the written information, consult a person who does.
10. Give at least as much thought when purchasing securities as you would when acquiring any valuable property.

This 10-Point Guide has been one of the developments of the close cooperation initiated between the offices of Attorney General Javitz of New York and the New York Regional Office of the Securities and Exchange Commission headed by Paul Windels, Jr.

It is presently contemplated that thousands of copies of the above 10-Point Guide will be distributed throughout New York by securities firms, the Better Business Bureaus, and other agencies interested in increased vigilance on the part of the investing public.

Paul Windels Jr.
Edward Schoen Jr.
United States Securities and Exchange Commission
225 Broadway, New York 7.

AID TO FOREIGN MEDICAL LIBRARIES

To the Editor:—Medical libraries and medical schools abroad are rapidly organizing and growing in Asia, Latin America, and other parts of the world. The United States government and private American aid have been helping through technical aid and scholarships to encourage and foster this growth. American medical practices and knowledge are thus of aid all over the world in making a better life possible. Many members of the American Medical Association appear to have been concerned directly or indirectly with this program of development. Those who have traveled abroad and visited medical libraries and institutions know that one of the most constant needs, always present in spite of all that has already been accomplished, is for up-to-date medical publications. Textbooks, new studies in all branches of medicine and public health, and professional journals are much in demand and impossible to provide in the numbers needed.

The A. M. A. recently helped meet this world-wide need by donating several thousand surplus copies of The Journal and the Archives to the distribution program of the U. S. Book Exchange, Inc., a private library service organization located in Washington, D. C. Through contract funds provided by the International Cooperation Administration and the U. S. Information Agency, this organization will distribute the journals (all published within the last two years) to institutions abroad for use in their libraries and as textbooks in their classrooms. This gift will be of inestimable value to the institutions receiving the journals. This is an ever present need, and the U. S. Book Exchange can receive and distribute almost any number of professional journals of the specialist variety and any books or monographs containing information still useful in actual practice. At present, the agency has enough of the general journals to satisfy distribution needs. Cost of transportation by parcel post or freight to Washington and the value of the publications donated are deductible for income tax purposes. Inquiries or donations should be addressed to the U. S. Book Exchange, Inc., 1816 Half St., S. W., Washington, D. C.

Alice Dulany Ball
United States Book Exchange, Inc.
Library of Congress Building
Washington 25, D. C.

DIETS

To the Editor:—Many physicians have been confused by publications in the lay press (De Groot: *Look* 20:36-39 [June 12] 1956; Norman: *Ladies Home Journal* 73:44-45 [July] 1956) and by conflicting letters (Dole: *J. A. M. A.* 161:901 [June 30] 1956; ibid. 161:1700 [Aug. 25] 1956) that have appeared in the correspondence section of The Journal regarding two diets studied at the Rockefeller Institute. This letter is intended to clarify the situation. The first of these diets (the so-called Revolutionary Rockefeller Diet) used regular foods whose protein content was restricted on the assumption that a low-protein intake would reduce appetite. The scientific report (Dole et al.: *Am. J. Clin. Nutrition* 2:381-391 [Nov.-Dec.] 1954) of this work supported but did not prove the assumption and indicated that the diet had been unsuccessful when the patients left the hospital. The second diet (the so-called Crash Diet or Fabulous Formula) replaced natural foods by a formula mixture whose operational principle was its fixed, invariant prescription of a low-caloric intake. The mixture was one of many (Ahrens et al.: *Am. J. Clin. Nutrition* 2:336-342 [Sept.-Oct.] 1954) designed for hospital metabolic studies, and its constituents were chosen for convenience and taste. For use in weight reduction, the total intake was reduced to 900 calories a day. The relatively low protein content which resulted was a property of the original mixture and was not a deliberate choice. Formula mixtures of different composition have been used in this way with similar results. The formula diet has no common application or mode of action with the low-protein diet. The only relationship between the two diets is that they were studied at different times in the same institution.

A later paper (Joliffe: *J. A. M. A.* 161:1633-1636 [Aug. 25] 1956) implied that both diets were unsafe because of their low protein content. I have had no direct experience with the low-protein diet. The formula diet studies have appeared in abstract form (Feinstein et al.: *Clin. Res. Proc.* 5:17-18 [Jan.] 1957; Feinstein and Schwartz: ibid. 5:180 [April] 1957) and a full scientific report (Feinstein et al.: *Am. Int. Med.* 48:330-343 [Feb.] 1958) has been published. The results show that patients dieting with formulas have maintained the same range of nitrogen balance as those on regular high-protein diets and have preserved normal values in all the physiological variables tested. In the outpatient studies, the percentages of weight loss in the formula-fed group were much higher than those obtained with many conventional diet programs.

The purpose of this letter is not to discuss methods or desirability of maintaining nitrogen balance during temporary periods of weight loss, nor is it to debate the plethora of nutritional theories and paucity of scientific data regarding techniques and results of weight reduction programs. It certainly does not intend to advocate the routine use of formula diets in obese patients. Its purpose is rather to call physicians' attention to factual results which verify the safety and utility of a formula diet in obese patients. Diets using conventional food are accepted and recommended by nutritional tradition. They are generally desirable for overweight patients but have often been unsuccessful. A formula diet has been strikingly effective in certain instances where regular diets have failed, and it provides an alternative therapeutic approach in some of these situations. Its possible application in individual patients should be determined by the physician without unwarranted fears for its safety.

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WEIGHT REDUCTION

To the Editor:—Dr. Max Wishnofsky (*J. A. M. A.* 166:964-965 [Feb. 22] 1958) is in error in stating "The thesis of Pennington is that when an obese individual is on a high-fat, high-protein ad libitum diet, a substantial loss of weight will occur even when there is no negative caloric balance." Such a statement appears nowhere in any of the papers I have written, nor is it implied in them. On the contrary, my statements on the matter have been very clear. For example: "In the treatment of obesity, the aim of which is to reduce the size of the adipose deposits, it is axiomatic that the caloric expenditure must exceed the intake" (*J. Clin. Nutrition* 1:100-106 [Jan.] 1953). Again: "The overall determinant in weight reduction is the degree to which the caloric expenditure exceeds the intake" (*New England J. Med.* 248:959-964 [June 4] 1953). My thesis has been summarized correctly by other commentators.

My thesis on weight reduction concerns itself with the manner in which a negative caloric balance is to be brought about. According to my plan, "treatment would be directed primarily toward mobilization of the adipose deposits, and the appetite would be allowed to regulate the intake of food needed to supplement the mobilized fat in fulfilling the energy needs of the body" (*J. Clin. Nutrition* 1:100-106 [Jan.] 1953). The evidence that such a plan of treatment, alternative to the usual one of caloric restriction, is possible has been presented in a number of my papers. I would like to mention the evidence of Kekwick and Pawan (*Lancet* 2:155-161 [July 28] 1956; *Metabolism* 6:447-460 [Sept.] 1957) that the metabolism of the obese person *rises* after a fatty meal.

Anyone who is interested in a correct statement of my thesis and in analyzing it for himself might refer to my papers, some of which are listed at the end of Dr. Thorpe's article (*J. A. M. A.* 165:1361-1365 [Nov. 16] 1957).

ALFRED W. PENNINGTON, M.D.
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DIAGNOSIS OF SKIN TUMORS

To the Editor:—May I add certain observations to the fine paper on "Aids in Early Diagnosis of Tumors on Tip of Nose" by Haggart and Rebello (*J. A. M. A.* 166:1010-1013 [March 1] 1958)?

In examining the skin changes of the eyelids and nose, one useful bit of equipment (which is available wherever an opthalmologist is found) is a biomicroscope or slit lamp. This instrument provides varying magnifications with a stereoscopic microscope of very high correction and a source of illumination, which can be used to examine the skin. I can recommend to all who have an ophthalmologist as a friend that skin lesions on the face be examined with his biomicroscope. As pointed out by the writers of this paper, skin changes are differentiated with powerful illumination.

My own personal findings with the additional use of Wood's light (long ultraviolet, 3,650 A) and stereobiomicroscopy have revealed further important changes which are of assistance in deciding (prior to any biopsy) whether or not a skin alteration is possibly neoplastic. The findings are embodied in the paper on "Ophthalmoluminescence: Definitions and Descriptions of Effects" (*Am. J. Ophth.* 44:360-372 [Sept.] 1957). It should be stressed that all lesions of the lid, nasal bridge, nasal tip, the facial area, the ears, and adjacent tissues are easily examined with high magnification with the biomicroscope, and with the use of Wood's light a further diagnostic aid is secured. It is to be hoped that many practitioners who do not employ optical magnification for skin observation will do so in the future, particularly in examining the facial tissues.

LESTER STEIN, M.D.
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DOCTORS AS CITIZENS

To the Editor:—This is to extend my heartiest congratulations on "Doctors and Politics," which appeared in THE JOURNAL, March 15, 1958, page 1313. The article was timely, well-written, and interesting. It was a powerful and worthy attempt directed against the "myopic lethargy" which, according to the author, seems to beset many physicians and, I think, also many medical students. The article says doctors "must take an active part in the political life of their communities and of the nation" if they wish to preserve their individual freedom. They "must emulate the tradition of the past," wherein physicians "were imbued with the idea of personal freedom, . . . were distinctly individualistic in their ideas and actions." Doctors "act as if centralized power, compulsion, and over-all planning (by the federal government) were the source of our economy. . . . 'The mainspring of human progress is individual liberty, and individual liberty decreases as federal power increases.'"

I particularly agree with these sentiments and believe that physicians, as acknowledged leaders of the community, should help spark their fellow-citizens' interest in reevaluating the "anything goes" philosophy which permeates our government and society at many levels. Recalling our history, we realize that national survival begins to be endangered as an inevitable consequence of easy-come, easy-go prosperity and a politically lackadaisical attitude of the people.

EARL DEGREY SHORT JR.
The Medical College of South Carolina
Charleston, S. C.

MEDICAL FILM REVIEWS

RX—A Prescription for Better Hospital Procedures: 16 mm., color, sound, showing time 34 minutes. Prepared in 1957 by and procurable on loan or purchase from University of Illinois Research and Educational Hospital, 840 S. Wood St., Chicago 12.

The purpose of this film is to record the actual steps taken in developing a work simplification program at the University of Illinois Research and Educational Hospital. Several sequences describe the training and instructional sessions in which the students participate. These sessions include the pegboard demonstration, the session on the "open mind to change," the five-step pattern of work simplification, and the use of the flow-process chart. Activities of the problem-solving team are illustrated through two actual improvements in procedures in the hospital. These are presented in "before and after" fashion—the old versus the new method of carrying out these two procedures. The photography is satisfactory, although further editing would have improved the film. It should be of interest not only to hospital administration and personnel but also to medical staff members. The work simplification approach to more effectively provide patient care and the stimulus to rethink routine should be of assistance to all concerned with care of patients in hospitals.

Human Gastric Function: 16 mm., color, sound, showing time 19 minutes. Prepared by Stewart Wolf, M.D., Oklahoma City. Produced in 1957 by Sturgis Grant Productions, New York, and procurable on loan from Medical Film Center, Smith, Kline and French Laboratories, Philadelphia 1.

The purpose of this film is to teach and demonstrate the effects of different psychological states and stresses on gastric function. It is a report of an experimental study on "Tom," a unique patient widely known in medical circles. "Tom" had an accident in early childhood which resulted in an extensive gastric fistula. This condition allowed study of the mucosa and observation of secretory action and gastric motility under various conditions. For example, the investigators were able to gain insight into the stomach's complex responses to different psychological stresses. The film is a partial record of 15 years' continuous study of this patient. The effects of fear, anger, and serenity are dramatically shown. Observations on the protective action of gastric mucin and on the experimental production of a small, superficial peptic ulcer are included. This film is highly recommended for medical students and general practitioners. Gastroenterologists, internists, and psychosomaticists will also be interested.

NEW FILM ADDED TO A. M. A. MOTION PICTURE LIBRARY

The Other City: 16 mm., color, sound, showing time 22 minutes. Produced in 1957 by the American Cancer Society, New York. Procurable on loan (service charge $1.00) from Motion Picture Library, American Medical Association, 535 N. Dearborn St., Chicago 10.

Using the theme, "A statistic is hard to remember; a city is hard to forget" and giving dramatic emphasis to the fact that about 75,000 American lives are needlessly lost to cancer each year, this documentary film shows a city of this size which has been figuratively erased from the living. The number 75,000 represents those who could be saved by presently known techniques of surgery and radiation if they got to their doctors in time for early enough treatment. Actual residents of Racine, Wis., not actors but ordinary people, lend themselves to human everyday vignettes which dramatize cancer's danger signals. It is pointed out that "the ways of their lives were various, but the way of their death was the same; needless." By natural symbols, buds blooming, streams dividing, and life bursting, the how if not the unknown why of normal and abnormal growth is told. This is a well-produced and well-developed film which is highly dramatic in its efforts to induce persons to pay attention to the warning signs of cancer. It would be effective in inducing persons to see their physicians frequently for purposes of cancer detection, and it is recommended for showing to adult audiences, including high school and college students.

Esophageal Perforation in a Sword Swallower: 16 mm., color, sound, showing time 9 minutes. Prepared in 1957 by and procurable on loan from Philip Thorek, M.D., 850 W. Irving Park Rd., Chicago 13.

This is a case presentation of a traumatic perforation of the esophagus, inadvertently self-inflicted by an apprentice sword swallower while practicing his art. An esophagogram and an artist's drawing showing the esophagus with the contained sword in relationship to the surrounding viscera demonstrate the site and manner of the perforation. The operative procedure of repair is shown. Although clear definition of the anatomic structures is lacking in some sequences, this is aptly compensated for by the interpolation of excellently colored drawings. The film ends with a professional demonstration of sword swallowing, executed by a tattooed master of the art. Roentgenograms showing the sword in place within the lumina of the esophagus and stomach attest that the deed is indeed authentic and not a feat of visual deception. The film is of specific interest to the surgeon who deals with problems of the esophagus and of general interest to the physician, resident, and intern as well as to apprentice sword swallowers.

ILLUSTRATED FILM REVIEWS

Illustrated reviews of current films will appear when possible as a regular feature in The Journal. *They will consist of an introduction by the author followed by a pictorial digest of actual frame enlargements selected as key points of the film.*

Ralph P. Creer, *Director*
Motion Pictures and Medical Television, Council on Scientific Assembly.

HUMAN GASTRIC FUNCTION

Stewart Wolf, M.D.

This film presents an unusual case, illustrating only a few of the studies and experimental methods which have been reported by the author and published in book form. Some of the more important observations on gastric function are mentioned and certain early hypotheses are corroborated and elaborated.

The patient, "Tom," in 1895, at the age of 9, developed a complete esophageal stricture from swallowing scalding clam chowder. A gastric fistula was created, through which he has fed himself ever since. In the past 15 years, Tom has been the subject of extensive investigations—he thus may be compared with Alexis St. Martin, whose fistula was the object of the well-known scientific observations of Colonel Beaumont more than a hundred years ago. The written review of this film appears on page 2216 of this issue.

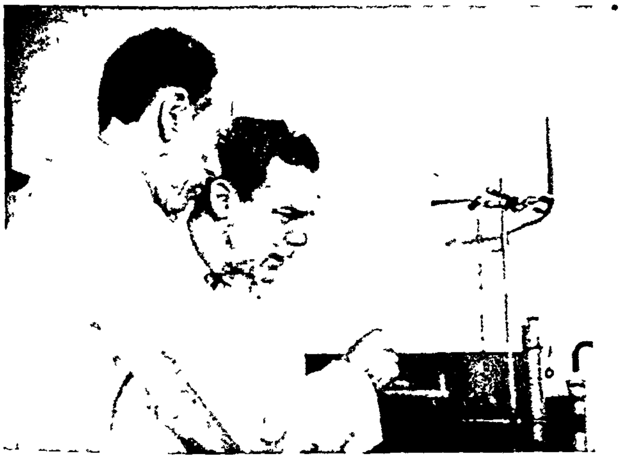

Fig. 1.—Study began at New York Hospital in 1943, in collaboration with Dr. Harold Wolff, and was continued by author at Oklahoma Medical Research Institute.

Fig. 2.—Tom became famous experimental subject. Over years his patience permitted extensive studies of his fistula, often involving observations continuously for days.

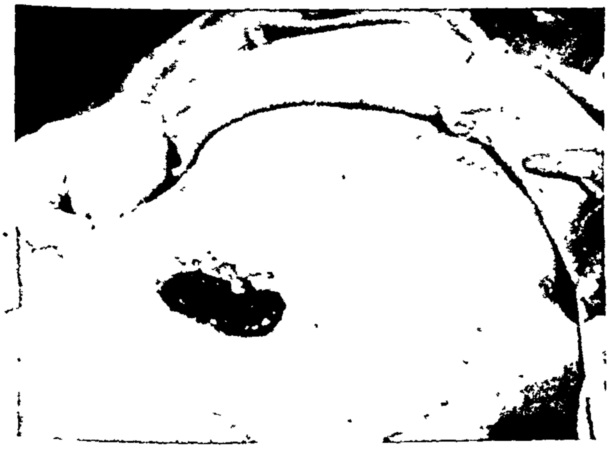

Fig. 3.—Fistula has permitted direct observation of gastric mucosa under many conditions and has allowed direct access to stomach for experimental work.

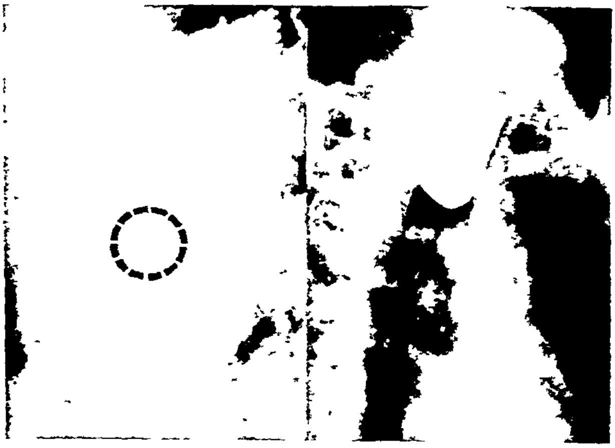

Fig. 4.—Left, gastric fistula is located about two-thirds of way between cardia and pylorus. Right, obstructed upper esophagus ends in cul-de-sac.

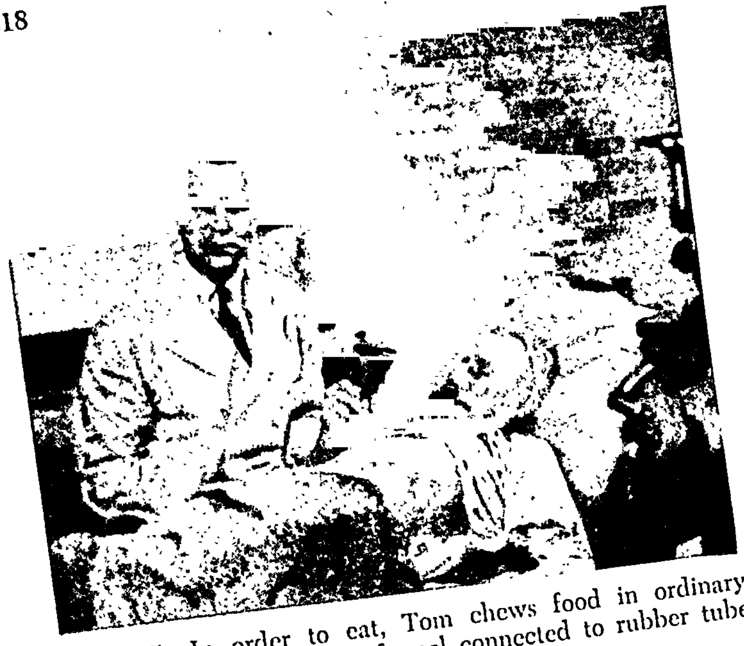

Fig. 5.—In order to eat, Tom chews food in ordinary fashion, then spits it into funnel connected to rubber tube which he inserts into his stomach.

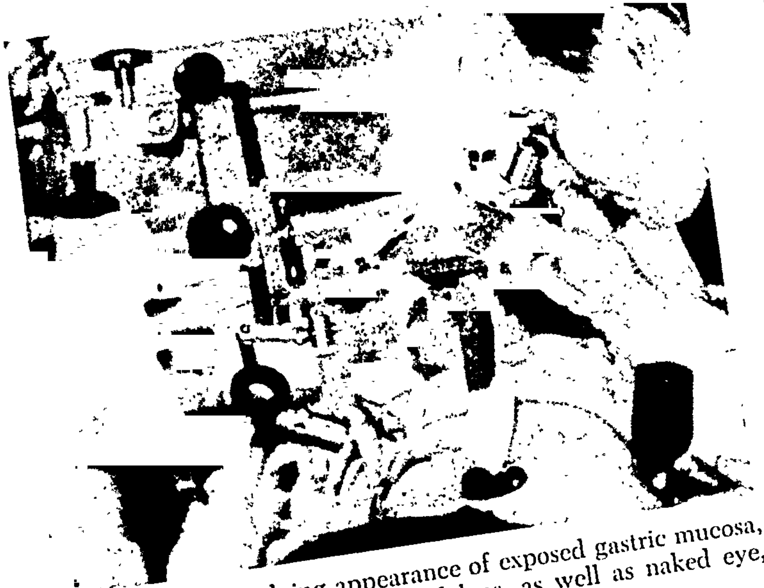

Fig. 7.—In studying appearance of exposed gastric mucosa, dissecting microscope and hand lens, as well as naked eye, were used.

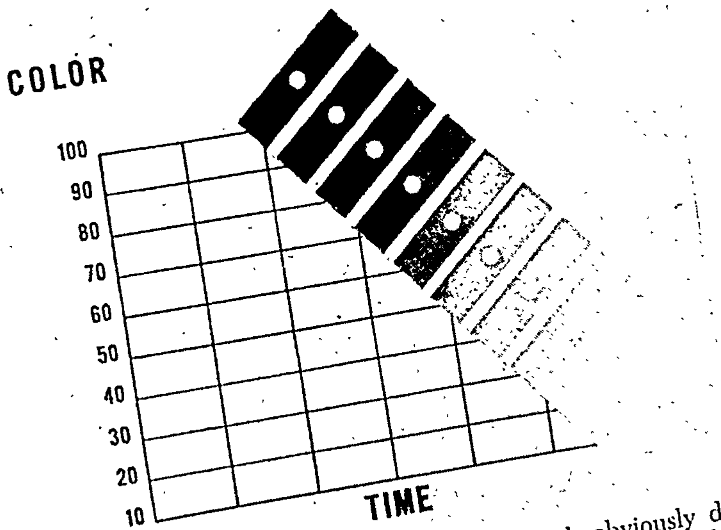

Fig. 9.—Thus, color of the mucosa, which obviously depends on blood flow, could be recorded at any time as number on graph.

Fig. 6.—When food was placed into stomach without being tasted, Tom lost weight, which implies that metabolic balance may be influenced by meaning of life experiences.

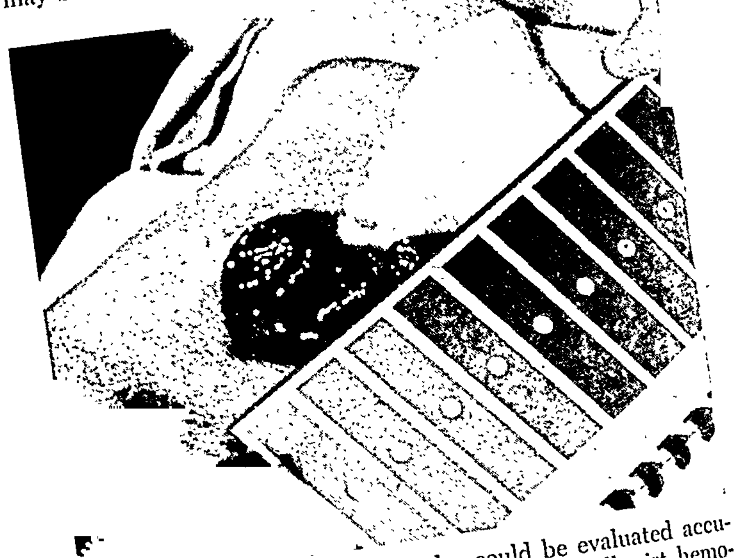

Fig. 8.—It was found that color could be evaluated accurately by comparing mucosa with ordinary Tallquist hemoglobin scale.

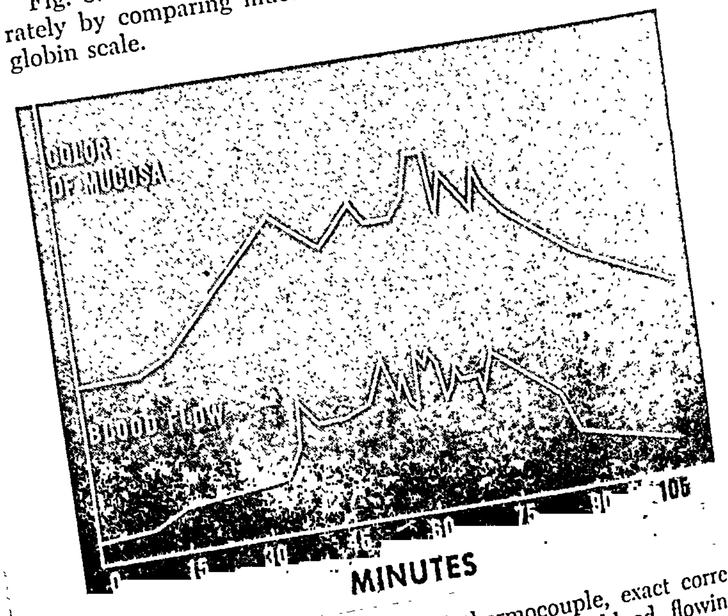

Fig. 10.—With use of special thermocouple, exact correspondence was found between amount of blood flowing through mucosa and its color.

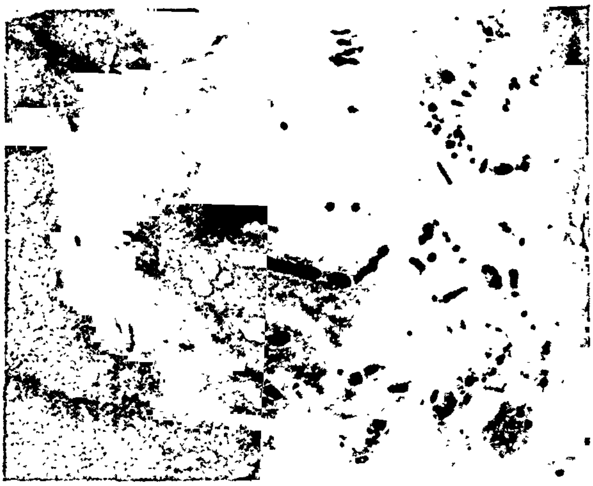

Fig. 11.—In pale, inactive state, large number of folds could be counted on surface of gastric mucosa.

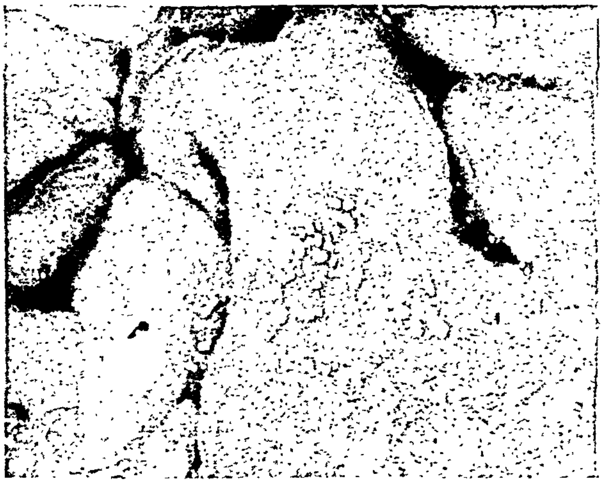

Fig. 12.—When mucosa became hyperemic, neighboring folds merged, showing that with hyperemia goes turgor.

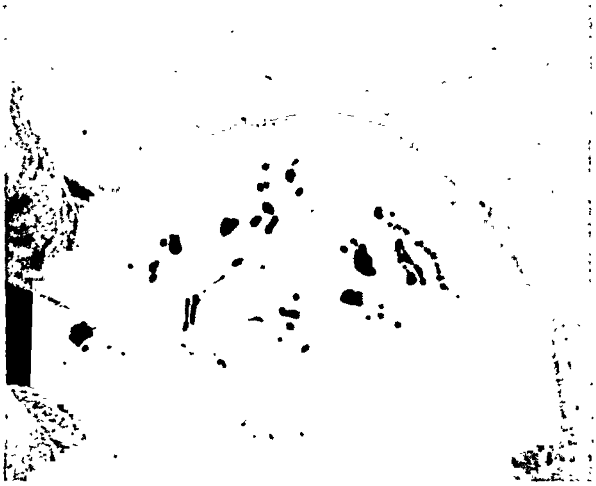

Fig. 13.—Turgid mucosa was vulnerable, slight touch causing petechial hemorrhages, and pain-sensitive, whereas it was insensitive in its pale state.

Fig. 14.—Gastric juice, easily collected for analysis with ordinary Chetwood syringe, quickly digests normal, healthy, tough skin.

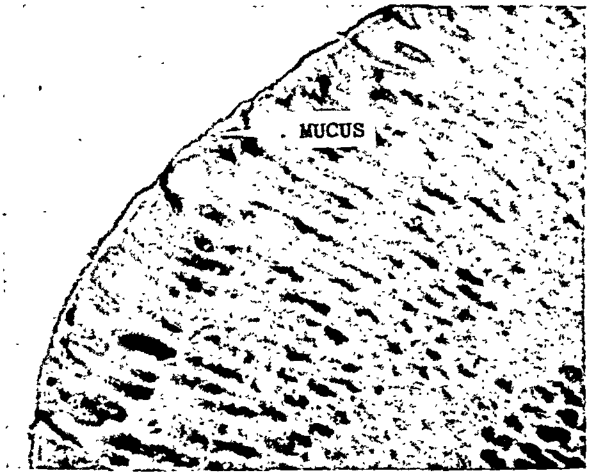

Fig. 15.—However, thick layer of mucus on surface of stomach evidently protects delicate cells of mucosa against digestion by gastric juice.

Fig. 16.—Likewise, no damage could be observed, even under microscope, when strong acid or blistering mustard were tested on mucosa.

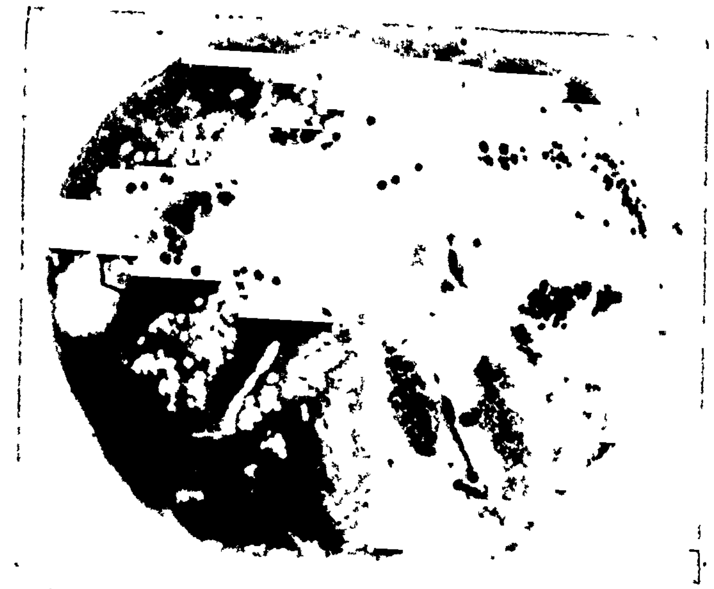

Fig. 17.—When mucus was constantly wiped from small area, crater developed, similar to clinical peptic ulcer. This healed rapidly when covered by petrolatum dressing.

Fig. 18.—Another aspect of gastric function is motor activity, recorded by balloon inserted into Tom's stomach, other end being attached through tube to kymograph.

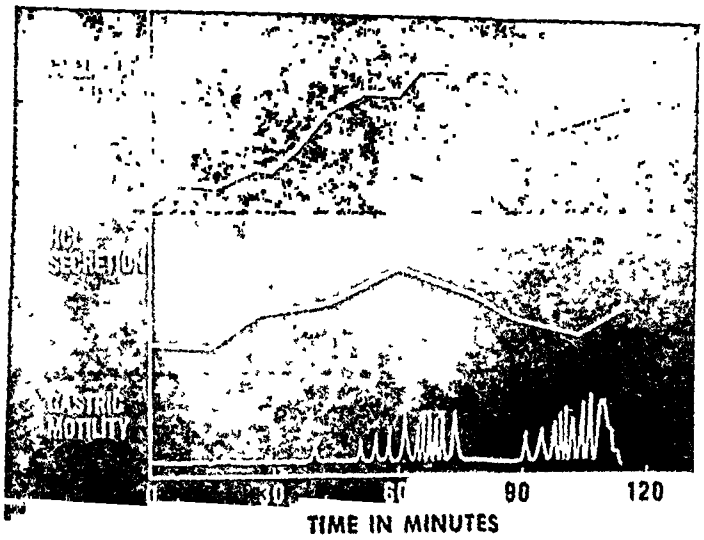

Fig. 19.—Records could thus be obtained correlating gastric motility simultaneously with inspection of color and chemical testing under variety of conditions.

Fig. 20.—Most interesting studies involved reaction of Tom's stomach to stress, occurring naturally or from interviews directed toward stressful response.

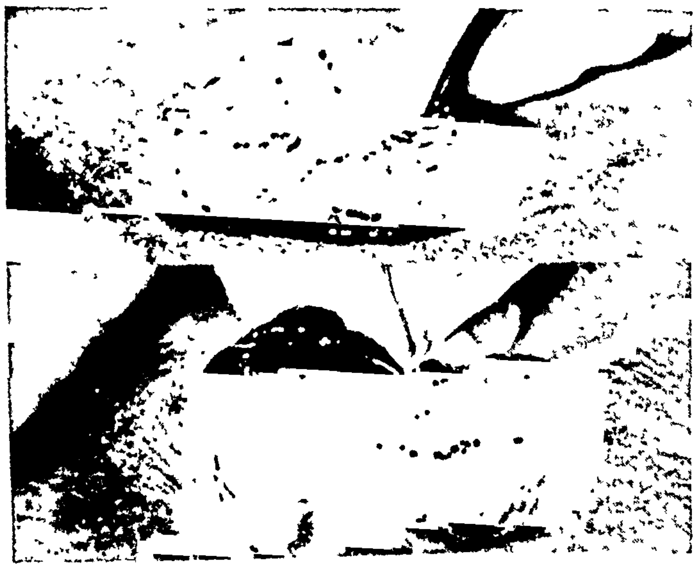

Fig. 21.—For example, when incident was recalled at which Tom became very angry, normal mucosa (above) became turgid and hyperemic (below), indicating hyperfunction.

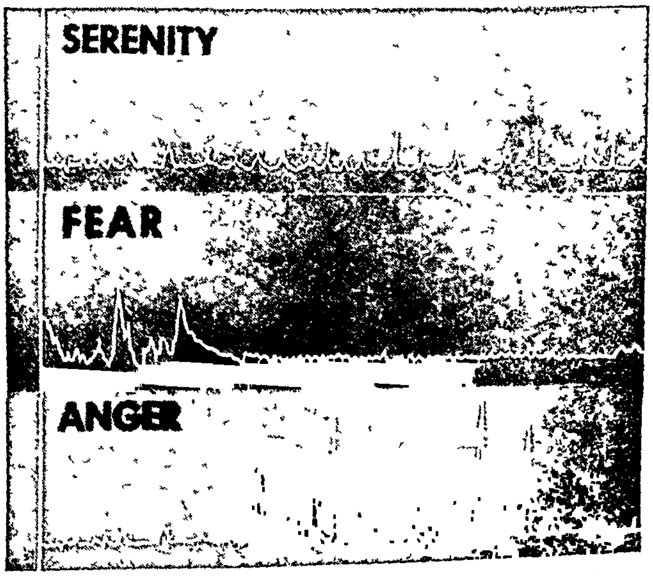

Fig. 22.—Tom has demonstrated that not only gastric hypofunction, as stated by Cannon, but potentially more dangerous hyperfunction may occur in reaction to emotional stress.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

The Significance of Atrioventricular Block Complicating Acute Myocardial Infarction. D. B. Cohen, L. Doctor and A. Pick. Am. Heart. J. 55:215-219 (Feb.) 1958 [St. Louis].

The authors report on 43 men, of the average age of 58.4 years, and on 25 women, of the average age of 65 years, with acute myocardial infarction complicated by high degrees of atrioventricular block. Electrocardiograms revealed the posterior wall as the site of the infarction in 51 (75%) of the 68 patients, the anterior wall in 16 (24%), and both the anterior and the posterior wall in 1 patient. Thirty-two patients (47.1%) died within 2 months of the acute attack. Of these, 12 had an infarct of the anterior wall, 19 of the posterior wall, and 1 of both the anterior and the posterior wall. Thus, 75% of the 16 patients with infarction of the anterior wall died within a 2-month period, whereas 37.3% of the 51 patients with infarction of the posterior wall died within the same period. Thirty-three of the 68 patients had second-degree auriculoventricular block, 22 had advanced second-degree atrioventricular block, and 13 had complete block. Eleven (33%) of the 33 patients, 11 (50%) of the 22 patients, and 10 (77%) of the 13 patients died within 2 months after the acute attack. Autopsy reports were available on 17 patients who died within 2 months of infarction complicated by block. There was involvement of the interventricular septum by the acute infarct in 16 of the 17 patients. Twenty-nine (44%) of the 68 patients survived from 2 months to 1 year, 22 (34.9%) survived from 1 to 5 years, 7 (11.8%) survived from 5 to 10 years, and 1 survived more than 10 years. These data show that the immediate mortality rate for infarction with second-degree, advanced second-degree, and complete auriculoventricular block exceeds that for myocardial infarction in general, especially if the infarct is located in the anterior wall and the block is due to necrosis of the ventricular septum. The mortality rate increases with the severity of the block. The prognosis for myocardial infarction complicated by atrioventricular block is further aggravated by factors known to be of importance in determining the immediate mortality rate for infarction in general. The long-term prognosis in patients surviving the initial episode is not affected by the persistence of an atrioventricular block.

Family Studies of Respiratory Infections. F. S. W. Brimblecombe, R. Cruickshank, P. L. Masters and others. Brit. M. J. 1:119-128 (Jan. 18) 1958 [London].

The authors report results of a clinical and bacteriological study of respiratory illness, which was carried out in families of the same size and structure (2 parents and 3 children, 1 of whom was under 5 years of age), living in the same working-class area of London, in 3 types of dwelling, namely, self-contained houses, self-contained flats, and rooms in tenement dwellings. The study, which lasted 2 years, included regular visits by a pediatrician or a nurse who, besides making clinical and social observations, every 14 days took throat and pernasal swabs from all members of the family. Observations on the spread of "indicator" organisms within the family groups, such as pneumococci, streptococci, and staphylococci, were used to confirm or modify the epidemiologic indications about the introduction and spread of infection given by traditional clinical methods.

Of some 12 social and environmental factors examined, for example, maternal care, range of outside contacts, and dampness of the house, only overcrowding and, with less certainty, inadequate clothing were found to be related to the incidence of acute coryza and chronic catarrh. The increased clinical secondary attack rate in conditions of continued close contact observed in the more crowded families was confirmed by the higher rate of apparent transfer of type-specific pneumococci in these families. On clinical grounds alone, infections appeared to be most often introduced by the youngest or preschool child, that is, the most susceptible member of the family. Corrections for differences in susceptibility gave results which suggested that even in congested working-class districts the school child is the most frequently exposed to extrafamilial infection and the most vigorous spreader of infection within the family. The greater frequency of transfer of pneumococci and the higher carrier rates of hemolytic streptococci

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The place of publication of the periodicals appears in brackets preceding each abstract.

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admission to the hospital he had a markedly stiff neck, and the tip of the spleen was palpable. The spinal fluid contained 90 cells per cubic millimeter (84% lymphocytes), 96 mg. of glucose per 100 cc., and 60 mg. of protein per 100 cc. The white blood cell count was 3,800 per cubic millimeter. The patient was irritable with slight injection of the right tympanic membrane and considerable injection of the scleras and conjunctivas. He had been in the mountains 1 week before the onset of illness. Two days before the illness his mother noted a tick embedded in the skin between his shoulder blades. Spinal fluid examination on the 3rd hospital day revealed 66 cells (all lymphocytes) per cubic millimeter and normal levels for glucose and protein; he was afebrile and was discharged. The virus of Colorado tick fever was grown from blood drawn on the 6th day of illness. Complement-fixing antibody was not present in the acute-phase serum initially but was present in a 1 to 16 dilution 6 weeks after the onset of illness. Without the history of exposure to ticks, this patient would have been considered to have nonspecific viral meningitis.

Colorado tick fever has a specific regional and seasonal incidence and a characteristic clinical pattern. The disease is caused by a virus transmitted to man by the adult hard-shelled wood tick, Dermacentor andersoni. The incubation period is usually 4 or 5 days. The illness occurs throughout the Rocky Mountain region from early spring to early autumn, with the peak incidence from April through the middle of July. With the increasing number of tourists and sportsmen visiting the Rocky Mountains, the incidence of the disease may well increase. At present the illness itself does not warrant extensive and specific measures to control the tick population, but this might be accomplished in endemic areas. Specific immunization is potentially available. Persons planning to enter areas which are heavily infested with ticks should be informed of the hazards and of appropriate personal precautions, including the wearing of proper clothing and careful inspection of scalp, neck, sleeve, belt, trouser, and sock-line areas for ticks at frequent intervals. Although the disease is contracted only in the Rocky Mountain area, physicians throughout the country should be aware of the clinical entity.

Chronic Unspecific Pneumonia: Clinical Picture. T. W. Aas and J. Krohn. Nord. med. 58:1949-1952 (Dec. 19) 1957 (In Norwegian) [Stockholm].

In spite of the application of the usual diagnostic methods, lung infiltrations of unknown etiology are not infrequently encountered. When they are limited to a localized part of the lung, the question is whether tuberculosis or a malignant process is present, possibly combined with atelectasis or unspecific pneumonia. In the course of a year 7 patients, 6 men and 1 woman, were treated for chronic unspecific pneumonia. One man was 30 years old; the other patients were over 45. The disease was localized in the upper part of the lung. In 5 cases the disorder set in with acute catarrhal symptoms, partly with the picture of pneumonia. Administration of the usual antibiotics did not give wholly satisfactory effect in any case. The later course was marked by cough, in some cases with hemoptysis, with periodic fever and, in part, greatly increased sedimentation reaction. Tests for tubercle bacilli were negative in all cases. The bronchoscopic picture was, on the whole, normal. Why a pneumonic process takes this course is not clear. In 3 patients resection of the affected part of the lung was done, as the possibility of cancer could not be completely excluded. Chronic pneumonia-like infiltration was found in the excised parts of the lung. Patients in whom cancer is suspected must be referred for operative treatment.

SURGERY

Scalene Node Biopsy: Implications in Abdominal and Thoracic Disease. F. A. Pualwan, C. D. Sherman Jr., G. L. Emerson and others. Cancer 11:4-8 (Jan.-Feb.) 1958 [Philadelphia].

Although the authors had performed scalene node biopsies before 1956, they then began to use a standard technique, which is carried out with the patient under local anesthesia through a 5-to-7-cm. incision placed about 1 to 2 cm. superior and parallel to the clavicle and centered over the lateral edge of the sternocleidomastoid muscle. The prescalene fat is exposed by retracting the sternocleidomastoid muscle medially and the omohyoid muscle laterally. When the dissection is extended medially to the junction of the internal jugular and subclavian veins, one easily obtains a chain of lymph nodes in the superior mediastinum. The authors obtained as many as 31 nodes in a specimen measuring not more than 4 or 5 cm. in diameter without there having been any clinically palpable nodes on physical examination. This report is limited to the first 100 patients for whom 102 scalene node biopsies were done from January, 1956, to January, 1957. Its primary aim is to broaden the indications for scalene node biopsies to include those cases in which neoplasm occurring outside the chest, particularly in the abdomen, is suspected and also to include those systemic diseases that may manifest themselves in the lymph nodes.

Twenty-seven of the 102 biopsies were carried out in the presence of abdominal lesions. This group included 20 patients with proved and probable cancer. None of these had any radiologic evidence of the disease in the lungs or the mediastinum. There were 4 positive scalene node biopsies; two of the specimens were from patients with carcinoma of the stomach and 2 from patients with carcinoma of the pancreas. In the 74 biopsies done for intrathoracic disease, there were 34 patients with proved cancer, with 15 positive biopsies. The biopsy was negative for 11 of 12 other patients in whom malignant tumor seemed probable. The biopsy for the remaining 28 patients in the intrathoracic group proved benign for 24 and probably benign for 4. Only 4 of the 25 patients with positive biopsies in the entire group had clinically suggestive scalene nodes, and 2 of these had lymphoma with slight generalized lymphadenopathy.

There was only 1 patient in the entire group who had a scalene node biopsy for a generalized disease without gross evidence of disease either in the thorax or in the abdomen. This was a patient with generalized lymphadenopathy, for whom the diagnosis of giant follicular lymphoma was made on scalene node biopsy. A scalene node biopsy is of definite value when it is positive. A negative biopsy, however, does not rule out malignancy. The procedure permits a diagnosis in poor risk patients with probably inoperable abdominal or thoracic disease. A positive scalene node biopsy may change the surgeon's attack from a massive "curative" resection to a lesser "palliative" operation. Only 1 major complication occurred in the patients for whom the 102 biopsies were done; a chylous fistula, followed by a wound infection, developed after 1 specimen had been taken for scalene node biopsy. The resulting chylothorax required repeated thoracenteses but was controlled in about 15 days. The risk of a rare complication is regarded as justifiable in view of the great value of scalene node biopsy. Routine study by scalene node biopsy in patients with seemingly operable tumors may help to elucidate the natural history of cancer.

Internal Mammary Artery Ligation for Coronary Insufficiency: An Evaluation. R. Adams. New England J. Med. 258:113-115 (Jan. 16) 1958 [Boston].

The author presents a summary of observations made in an attempt to evaluate internal mammary artery ligation as a method of therapy for coronary insufficiency. Angina pectoris, myocardial ischemia and infarction, and major arrhythmias are regarded in this study as variable sequelae to inadequate coronary artery inflow. The histories of 4 patients are discussed. Three of the 4 patients believed themselves to be significantly benefited or relieved of pain by the operation. One patient had no pain. Pain disappeared in 2 cases before the vessels had been ligated but after the patients thought that they had been ligated. Pain relief in the 4th patient was related to lessened physical activity. Symptomatic improvement was not supported by objective clinical tests in any of the cases. One patient is dead, and the other 3 are believed to show changes indicative of progressive myocardial damage. Anatomic dissections were made in 3 fresh cadavers. The pericardiacophrenic vessels in these 3 subjects were variable. Mechanical measurements of intra-aortic and intramammary pressures and of internal mammary artery and pericardiacophrenic artery flow rates were made in 2 fresh cadavers. There was no measurable sustained increase in minute volume of flow from the pericardiacophrenic artery after occlusion of the internal mammary artery. The symptom-relieving effectiveness of a patient's will to succeed, of belief in his physician's word, and of confidence in his surgeon's procedure was again recognized.

Coarctation of the Aorta Proximal to Both Subclavian Arteries: Case Report of a Six-Year-Old Girl. I. Brynolf, C. Crafoord and E. Mannheimer. J. Thoracic Surg. 35:123-130 (Jan.) 1958 [St. Louis].

The authors report on a 6-year-old girl with a rare variant of coarctation of the aorta, proximal to both subclavian arteries, associated with a right-sided aortic arch and a left-sided descending aorta. The diagnosis was based on the absence of pulsations in the arms and legs and on the high carotid artery pressure. It was established preoperatively with the aid of selective angiocardiography. At surgical intervention, the coarctation was resected, and the aorta, which ran behind the esophagus, was transposed to run in front of the trachea. The patient withstood the operation well. A follow-up examination 5 months after the operation revealed that the carotid pulses were softer; the pulses in the left arm and both legs were palpable but faint. Pressure measurement in the carotid artery showed 110 mm. Hg as compared with 140 to 150 mm. Hg preoperatively. Angiocardiography revealed a fairly narrow communication between the ascending and the descending aorta and no postoperative aneurysm.

The patient was operated on at the age of 6 years, in contrast to the view of many workers that operation should be performed at the age of 10 to 20 years when sufficient collaterals have developed and before arteriosclerotic changes have appeared in the aorta. The recent tendency is to undertake operation on this malformation at an early age. At the authors' hospital in Stockholm it is done any time after the patient has reached 3 years of age. When signs of enlargement of the left side of the heart are present, it is performed even earlier, as soon as the anatomic details have been determined. Inasmuch as the subject of this report also had a cleft palate, both the vascular anomalies and the malformation of the palate fixed as the time at which fetal injury occurred the latter part of the second embryonic month. The patient had both a left-sided ductus arteriosus and a left-sided subclavian artery developed from the persisting thoracic aortic root on the left, and these may have been the causes of her anomalies, according to Bedford and Parkinson's theory, but the existence of some other cause has not been ruled out.

Patent Ductus Arteriosus in Infants and Small Children. I. Boesen. Ugesk. læger 119:1607-1609 (Dec. 12) 1957 (In Danish) [Copenhagen].

Patent ductus arteriosus was the main diagnosis in 17 out of 163 children under 2 years of age with congenital heart disease; 11 of the 17 were infants. The continuous murmur characteristic of patent ductus arteriosus is rarely heard in infants; yet it was present in 3 patients in this series. Heart catheterization (and possibly angiography) must therefore, as a rule, be resorted to for a definite diagnosis. Since from 10 to 15% of the cases of heart insufficiency, with fatal outcome in infancy, are due to patent ductus arteriosus and since the condition can be completely cured by operation, all children in this age group with heart insufficiency should be admitted for special examination. Of the 17 patients, 1 died of heart insufficiency. Sixteen patients were catheterized, and in 15 the catheter passed through the patent ductus into the aorta. Operative closure of the patent duct was done in the 16 patients, with 1 death.

Central Fractures of the Acetabulum. R. A. Knight and H. Smith. J. Bone & Joint Surg. 40 A:1-16 (Jan.) 1958 [Boston].

The increasing frequency with which automobile accidents produce central acetabular fractures has brought a change in the attitude of orthopedic surgeons toward the treatment of these fractures. Resignation and defeatism have changed to active attack. Prior to 1949 at the Campbell Clinic in Memphis, Tenn., open surgery in central fractures of the acetabulum was limited to extracting the incarcerated head of the femur from the pelvis when manipulation and traction had failed to do so. The experience of these authors in the open reduction and internal fixation of these fractures began with a severely injured 19-year-old man. This patient had multiple fractures of the pelvis and ipsilateral fractures of the trochanteric region, shaft, and condyles of the femur, which precluded the use of the usual methods of traction. The acetabular deformity was so severe that joint junction would be poor, and degenerative changes would inevitably develop unless the acetabulum was restored. Accordingly, 16 days after injury the fracture was exposed through a Smith-Petersen iliofemoral approach. The operation, including exposure of the fracture, was difficult; it was almost impossible to close the fracture. Finally, Knowles pins were introduced into each fragment, one pin on either side of the fracture. These 2 pins were then grasped by a bone-holding forceps, and the acetabular fragments were forced into near-anatomic position. The reduction was maintained by 3 Knowles pins inserted across the fracture. All the patient's fractures united, and now, 8 years later, he has made a complete recovery with no hip disability.

Despite the satisfactory result in this patient, no further open reductions of central fractures of the acetabulum were performed at the Campbell Clinic until 1955. Since that time the authors have used this form of treatment in 7 more patients. The results have continued to be encouraging, and the authors are certain that this is the best method of treatment in properly selected cases. They comment on the mechanism of injury, anatomy of the fracture, roentgenographic studies, indications for operation, principles of reconstruction, and results. The primary objective is to restore the weight-bearing vault. Improvement of the symmetry of the pelvis or reduction of the posterior portion of the acetabulum, if achieved as well, is a dividend. Detailed classification of these fractures is neither possible nor necessary. A simple working rule divides them into 2 major types: horizontal and vertical. The horizontal type is approached through an anterior incision; the vertical, through a posterolateral incision. Stereoscopic anteroposterior roentgenograms are essential to the correct interpretation of the fracture and to the correct choice of approach. After open reduction after-care is greatly simplified, and morbidity is greatly diminished. The results after open reduction are, to date, generally superior to those obtained in the past by the older methods of manipulation and traction. Long-term studies of a large series of patients will be necessary before the method can be fully evaluated.

Indications for Common-Duct Exploration: Evaluation in 1000 Cases. M. K. Bartlett and W. R. Waddell. New England J. Med. 258:164-167 (Jan. 23) 1958 [Boston].

The records of 1,000 unselected cases of cholecystectomy and choledochostomy at the Massachusetts General Hospital in the years 1943-1954 were reviewed, and the indications for and the results of the latter procedure were tabulated. The authors have attempted to determine the predictability of the presence of common-duct stones on the basis of the following indications: jaundice; stone palpable in the duct; dilated common duct; dilated cystic duct; small stones in the gallbladder; and previous attacks of pancreatitis. Previous attacks of pancreatitis constitute an indication for choledochostomy even though few common-duct stones will be found. Jaundice, "palpable stone," and dilatation of the duct system are sufficiently accurate indexes of stones in the common duct to be considered urgent indications for choledochostomy. The presence of small stones in the gallbladder, when this is the only reason for choledochostomy, constitutes a relatively poor indication; the operation has produced only a 16% yield of common-duct stones. It is in this group of cases that reduction in the frequency of choledochostomy is indicated.

Results of Electrosurgical Radical Mastectomy, with Routine Skin Graft and Postoperative X-ray Therapy: A Review of 309 Cases. D. Jackson and D. Jackson Jr. Cancer 11:18-21 (Jan.-Feb.) 1958 [Philadelphia].

End-result studies are presented for 309 patients with breast cancer treated by electrosurgical radical mastectomy, augmented by routine skin grafting and postoperative x-ray therapy. Emphasis is placed on the practice of extra-wide resection of skin requiring a routine skin graft. Use of the electrosurgical unit for both dissection and hemostasis is discussed, and the main value of this procedure as a time-saving feature is pointed out. Of the 309 patients operated on, 221 (71.5%) survived free of disease for 5 or more years; 85 (54.8%) of the 155 patients operated on 10 or more years ago have survived for at least 10 years. In a much larger series (913 patients) reported by Hickey, there was a 5-year survival rate of 46.8%. The authors feel that the more than satisfactory salvage rate achieved should give rise to careful consideration of the method of treatment used.

Surgical Treatment of Patent Ductus Arteriosus in Infants and Young Children. A. Gammelgaard and P. Therkelsen. Ugesk. læger 119:1609-1611 (Dec. 12) 1957 (In Danish) [Copenhagen].

Surgical closure of patent ductus arteriosus was done in 16 children, whose ages ranged up to 2 years; 9 were less than 1 year old. Pulmonary hypertension was most marked in the age group under 6 months. The patent ducts were completely closed by ligature and suture ligature. One death from respiratory insufficiency occurred 9 hours after the operation. In 5 cases there were transitory postoperative complications in the form of respiratory difficulties and cyanosis. Follow-up of 14 children showed no sign of recanalization. Measurement of pulmonary artery pressure during operation showed a fall in pressure but not, however, to normal values. Regression of pulmonary hypertension presumably depends on early closure. The operative mortality was low, considering the high incidence of pulmonary hypertension.

Sympathectomy for Raynaud's Phenomenon: Follow-up Study of 70 Women with Raynaud's Disease and 54 Women with Secondary Raynaud's Phenomenon. R. W. Gifford, E. A. Hines Jr. and W. McK. Craig. Circulation 17:5-13 (Jan.) 1958 [New York].

The authors report on 70 women, between the ages of 16 and 55 years, with Raynaud's disease. Sixty-eight of these patients were subjected to a sympathectomy for disease affecting the upper extremities, 16 of them being operated on for disease affecting both the upper and the lower extremities; the remaining 2 patients were operated on for disease affecting the lower extremities only. The period of postoperative follow-up for the 70 women varied from 1 to 28 years, and the mean follow-up period was 12 years. Sympathectomy for disease affecting the upper extremities gave good or excellent results in 37 (54%) of the 68 women. Good or excellent results were obtained more frequently if complications of Raynaud's disease, such as trophic lesions or sclerodactylia or both, were not present before the operation. There was no significant difference between the results obtained by preganglionic and postganglionic sympathectomies. Two patients (3%) lost portions of fingers after sympathectomy. Most of the 31 patients who had a fair or a poor long-term result of sympathectomy for disease affecting the upper extremities initially obtained a good result and then had relapses in the course of the first 2 years after sympathectomy. Sympathectomy for disease affecting the lower extremities gave good or excellent results in 17 (94%) of the 18 women.

In addition to the 70 women with Raynaud's disease, 54 women with Raynaud's phenomenon secondary to other diseases, such as acrosclerosis, rheumatoid arthritis, livedo reticularis, or acrocyanosis, were also subjected to sympathectomy on the upper or the lower extremities or both. The operation gave poor results in 33 (72%) of the 46 patients with secondary Raynaud's phenomenon in the upper extremities and only slightly better results in those in whom the lower extremities were affected. Sympathectomy should be reserved for patients with the more severe and progressive Raynaud's disease, since the prognosis is good without sympathectomy when the disease is mild or moderately severe and is not progressing.

Radiation Sterilization of Homogenous-Bone Transplants Utilizing Radioactive Cobalt: Preliminary Report. P. H. DeVries, C. E. Badgley and J. T. Hartman. J. Bone & Joint Surg. 40 A:187-203 (Jan.) 1958 [Boston].

Orthopedic procedures upon children and patients who are poor surgical risks demand that adequate supplies of sterile bone be available at all times. To assure sterility, bone transplants have been boiled or soaked in various types of antiseptic solutions. To assure adequate preservation of the tissue, they have been subjected to freezing and freeze-drying. Obtaining sterile bone at autopsy and subjecting it to freeze-drying have been an excellent method of maintaining a bone-bank. However, the technical difficulties involved in obtaining sterile bone are numerous, and the method does not always assure the surgeon that the tissue obtained is sterile. Freeze-drying does not sterilize tissue and, in fact, has proved an excellent method of preserving many types of bacterial and viral organisms. The bone-bank problem is, therefore, how best to provide sterile tissue that is readily revascularized, absorbed, and replaced by the host with a minimum of reaction. Any process of sterilization or preservation that denatures the protein constituents of bone would probably retard the process of revascularization and absorption. It is known that high-intensity gamma radiation from radioactive cobalt will inactivate certain bacteria and viruses and that it is useful in the preservation of meat and other food products. Certain enzymes are only slightly altered by relatively large doses of gamma radiation.

Radiation sterilization of bone-bank bone was investigated by the authors, because the use of frozen bone and boiled or autoclaved bone had resulted in too high an incidence of postoperative wound infections and unsatisfactory results. Since December, 1954, radioactive cobalt has been used at University Hospital in Ann Arbor, Mich., to sterilize bone, blood vessels, and cartilage transplants. When combined with a freeze-drying process, radiation sterilization utilizing radioactive cobalt has proved an effective method of maintaining a bone-bank. It has been found that irradiated bone transplants function satisfactorily, both experimentally and clinically. In 104 surgical procedures in which irradiated homogenous-bone transplants were used, five postoperative wound infections occurred. The irradiated bone transplants were not felt to be the source of these infections. The encouraging over-all clinical results in 104 operative procedures prompt continued use of irradiated homogenous-bone transplants.

GYNECOLOGY & OBSTETRICS

Gestation and Carcinoma of the Uterine Cervix. H. Zeitz. Deutsche med. Wchnschr. 83:64-68 (Jan. 10) 1958 (In German) [Stuttgart, Germany].

The author believes that there is a causal connection between gestation and cervical carcinoma. He arrives at this conclusion from studies on 3,050 women with carcinoma of the uterine cervix in comparison with about 1 million women of the same age range in the general population. Information was obtained on (1) age of the women at time of marriage or first cohabitation and their number of births, (2) average number of births and age at time of marriage, (3) percentile distribution of births and age at time of marriage, (4) percentile distribution of births among Jewesses compared with other women, (5) incidence of cervical carcinoma and the occupation of the husband. No significant differences were observed between the women with and the women without cervical carcinoma as regards age at time of marriage or first coitus, but the women with cervical carcinoma had a much greater incidence of births. This greater incidence of births was evident in the women with cervical carcinoma regardless of age at time of marriage.

With regard to the occupation of the husband, it was found that the wives of laborers and farmers not only had a higher incidence of cervical cancer but also a higher average number of births than had the wives of office workers, professional men, and others at the higher social levels. On the other hand, even within the different social groups women with cervical carcinoma had a higher average number of births than did the other women. Among Jewesses, who in other investigations had generally shown a lower incidence of cervical carcinoma (owing to circumcision of the husband), cervical carcinoma was found more often in the high multipares than in the controls. The author deduces that gestation involves a factor that has some relationship to the genesis of cervical carcinoma. It is not the only factor, however. What processes in the course of gestation favor the carcinomatous degeneration of the uterine cervix await proof.

Adrenal Changes in Post-Term Infants and the Placental Dysfunction Syndrome. R. P. Bolande. Am. J. Path. 34:137-147 (Jan.-Feb.) 1958 [Ann Arbor, Mich.].

Physiological studies demonstrating a diminution in placental function near and after term have tended to corroborate the opinion of most investigators that prolonged gestation can be associated with deleterious effects on the fetus. The placenta is known to stop growing before term, and its permeability progressively diminishes after the 36th week of gestation. The autopsy records of the Institute of Pathology of Western Reserve University from 1952 to date were examined. Stillborn infants dying within 36 hours of delivery and newborn infants dying before 3 days of life, with the clinical diagnosis of prolonged gestation, postmaturity, or the placental dysfunction syndrome, were selected for study. Infants showing maceration or tissue autolysis were excluded. Criteria for postmaturity were based solely on calculated age of gestation and included infants of 41 weeks' gestation or more. The clinical diagnosis of the placental dysfunction syndrome was based on Clifford's criteria: evidence of recent weight loss; small size for the calculated length of gestation; a dry, wrinkled, scaling skin devoid of vernix caseosa; and presence of thick, yellowish meconium in the amniotic fluid, resulting in staining of the skin and of the umbilical cord.

Twelve newborn and stillborn infants with the placental dysfunction syndrome or signs of postmaturity were studied pathologically, particular attention being paid to the adrenals. In this series of 8 postterm infants and 4 infants showing the placental dysfunction syndrome, all but 2 showed significant lesions of the fetal adrenal cortex. To test the significance of these findings, 138 consecutive autopsies of perinatal deaths were studied. In reviewing the morphologic features of the postterm infants and those with the placental dysfunction syndrome, nothing was observed which could be construed as pathognomonic of either condition. However, degenerative and hemorrhagic lesions of the fetal adrenal cortex occurred with significantly greater frequency in the study group than in a random population subjected to perinatal autopsies. It is possible that these changes might represent precocious involution of the fetal adrenal cortex, having its inception in utero, and these changes may reflect inadequacies of placental function.

Preinvasive Cancer of the Uterine Cervix. E. S. Taylor and L. C. Walker. Postgrad. Med. 23:105-108 (Feb.) 1958 [Minneapolis].

Between Dec. 1, 1947, and Jan. 1, 1957, 11,324 patients examined in the department of obstetrics and gynecology of the University of Colorado School of Medicine in Denver were subjected to the Papanicolaou vaginal cytological test as a routine screening procedure. Fifty-one of the 11,324 patients screened were detected as having preinvasive carcinoma of the uterine cervix. Twenty additional patients were found to have preinvasive cancer by a primary biopsy. The 4th decade of life accounted for the largest group, rather than the 5th decade, which predominates in cases of invasive cervical cancer. All the patients except 1 were married, and all but 5 had had children. The 1 unmarried patient had been pregnant. This finding is in keeping with the fact that cervical cancer is a disease of the noncelibate. There were relatively few of the classical symptoms usually attributed to early cervical cancer. About 33% of the patients were seen because of pregnancy; another 33% had a menstrual disorder or vaginal discharge; and the remaining 33% had various complaints, none of which suggested early cancer. These findings emphasize that carcinoma in situ is a disease without signs or symptoms and, therefore, can usually be discovered only by Papanicolaou vaginal cytological testing, followed by a 3-stage uterine biopsy taken from the squamocolumnar junction of the cervix, from the endocervix, and from the endometrium, to substantiate or to rule out diagnosis of preinvasive carcinoma or possibly invasive carcinoma.

Fifty-three of the 71 patients received definite treatment, consisting of total abdominal or vaginal hysterectomy with excision of 2 cm. of the upper vagina in 50 and of radium treatment in 3 in whom the general condition contraindicated major surgical treatment. There were no operative deaths, and cancer has not recurred in any of these patients after treatment. The remaining 18 patients had only a cervical conization for reasons of their youth and their desire to have more children. Four of the 18 were lost to follow up, and 1 died of adenocarcinoma of the rectum. Eleven of the remaining 13 patients are free of any biopsy or vaginal cytological evidence of disease. A patient in whom the diagnosis of in situ carcinoma of the cervix has been made has a 44% chance of cure by simple cone biopsy alone.

Cytological Screening for Cervical Cancer: Comparative Findings in a 6-Year Survey of a Well Population. E. Stern. Cancer 11:122-126 (Jan.-Feb.) 1958 [Philadelphia].

The examination of vaginal smears from 39,387 women, during the years from 1950 to 1955 inclusive, led to the detection of 303 genital cancers. This study was limited to the primary cancers of the uterus and, more particularly, to the 241 squamous cancers of the cervix. The group included all the proved cervical cancers seen at the clinic except for the occasional clinically advanced case in which the diagnosis was obvious and in which smears were not taken because of danger of hemorrhage from manipulation. During the period of survey there was a progressive increase in the number of in situ cases discovered, that is, the increment was almost entirely accounted for by the increased number of cancer lesions in the stage 0 group. The main change in procedure during the 6-year period was the increasing use of the smear as part of the examination, with the resulting increase in discovery of in situ cases, per 1,000 population, from 0.86 in 1950 to 3.0 in 1955. The real increase in effectiveness of this policy is partially concealed by the fact that a sizable proportion of the total group examined each year are individuals who have been examined previously by the clinic. The incidence of 3 in situ cervical cancers per 1,000 population when all individuals were screened is consistent with that statistically expected in the general population. The stage 0 cancer lesions showed a peak incidence when the patients were between 30 and 39 years of age, but they were found at all ages from 20 to 70 years.

PEDIATRICS

Stevens-Johnson Syndrome. D. A. Sher. Minnesota Med. 41:32-34 (Jan.) 1958 [St. Paul].

The author reports a case of Stevens-Johnson syndrome, a variety of erythema multiforme exudativum, in a 10-year-old girl. Physical examination on admission to the hospital revealed a toxic, dehydrated, and acutely ill child. The temperature was 105.4 F (40.8 C). The pulse was rapid, and restlessness was marked. There was a generalized, widely spread rash, involving the palms and soles. The mucous membranes of the mouth were ulcerated, and a conjunctivitis was present. The patient was placed on therapy with penicillin, erythromycin (Ilotycin), and parenterally administered fluids. Her condition became progressively worse during the next 2 days. There was a severe conjunctivitis with pericorneal vascular injection and marked purulent drainage. The buccal mucous membrane showed an ulcerated appearance, and considerable sloughing was noted. The tongue was coated and ulcerated. There was a brownish coating on the gums and teeth. The tonsils had a grayish exudate, and the pharynx was injected and swollen. The posterior lymph nodes were palpable. The skin presented a generalized papular, macular, vesicular eruption; large bullae were observed on the face, abdomen, and buttocks. Slight pressure over the lesions caused superficial peeling of the skin, leaving a violet-red raw surface. Penicillin and erythromycin were withdrawn, and the patient was given 20 mg. of corticotropin (ACTH) every 6 hours and 100 mg. of tetracycline (Achromycin) every 8 hours, 10% dextrose by continuous drip, vitamin B complex, and vitamin C. There was an apparent dramatic response to the corticotropin and supportive therapy. Administration of corticotropin and tetracycline was continued for 10 days with a gradual decrease in dosage. The skin lesions and mucous membrane involvement cleared rapidly, and the patient was discharged 15 days after admission to the hospital.

The syndrome is characterized by a variation in skin reaction, involvement of the mucous membranes, severe ophthalmia, and severe general reaction. The causation of the syndrome has not yet been elucidated. The lack of a biological syndrome, the ineffectiveness of antibiotics alone, and the dramatic effects from the administration of corticosteroids seem to indicate an allergic basis for the disease. The disease is self-limiting and variable in its course. Since sensitization may play a role, antihistamines and adrenal steroids are indicated in treatment. Antibiotics, except those with possible sensitizing properties, should be given to control secondary bacterial invaders. Supportive therapy is essential because of the severity of the disease.

Obstructing Subglottic Hemangioma of the Larynx in Infancy: Review of the Literature and Report of a Deceptive Case. P. Doermann, J. Lunseth and R. H. Segnitz. New England J. Med. 258:68-71 (Jan. 9) 1958 [Boston].

A subglottic hemangioma in a 1-month-old female infant proved extremely deceptive and was diagnosed with certainty only at autopsy. Upper respiratory obstruction was a significant and characteristic clinical observation. A unique feature was that the hemangioma was not grossly apparent by direct laryngoscopy or bronchoscopy. Autopsy revealed a symmetrical stenosis of the subglottic lumen without discoloration of the overlying mucosa. The sectioned area revealed spongy, brown tissue in the submucosa, involving approximately the anterior three-fourths of the circumference of the trachea between the vocal cords and the cricoid cartilage. The lesion measured 3 or 4 mm. in thickness and practically occluded the lumen of the subglottic area. Only 14 previous cases of juvenile subglottic hemangioma have been reported. This lesion is probably more prevalent than indicated by reports and should be considered in the differential diagnosis of upper respiratory obstruction in infants. Irradiation preceded by tracheotomy is recommended as the treatment for proved cases and might also be undertaken when the site of respiratory obstruction and the clinical course are suggestive of this deceptive lesion.

Endobronchial Tuberculosis in Children: A Study of 156 Patients. E. M. Lincoln, L. C. Harris, S. Bovornkitti and R. W. Carretero. Am. Rev. Tuberc. 77:39-61 (Jan.) 1958 [New York].

In the chest clinic of the children's medical service of Bellevue Hospital, in which nearly 1,000 consecutive cases of primary pulmonary tuberculosis were observed from 1930 through 1946, a study of endobronchial disease in children with primary pulmonary tuberculosis was begun soon after antituberculous drugs became available. A preliminary report in 1952 showed that the results of specific therapy were disappointing; no evidence was obtained by bronchoscopy that streptomycin had a beneficial effect on endobronchial involvement due to encroachment of tubercular nodes on bronchi. A technique of anesthesia was developed with the purpose of avoiding unnecessary psychic and physical trauma owing to repeated bronchoscopies.

The present report is based on 156 children who had bronchoscopic evidence of tuberculous endobronchitis. Endobronchial tuberculosis was more frequent in children less than 4 years of age and in boys. Severe symptoms were more often observed in young infants. Roentgenologic evidence of obstruction was observed in 90% of the patients. Evidence of segmental obstruction was more commonly seen in the right lung and most often in the right middle lobe and in the anterior segment of the right upper lobe. Seventy-seven per cent of the group received antimicrobial therapy. In 66% of those who were treated, the medication was given for more than 6 months; in 48%, for more than a year.

Granulation tissue was the most frequent finding on bronchoscopy. Fifty-four of the 156 patients had polyps, and erosion of the bronchial wall was diagnosed in 25 patients. The duration of endobronchial involvement could be measured by bronchoscopy in only 70 patients. It continued for less than 3 months in 11 children, 4 of whom were untreated, and from 1 to more than 3 years in 23 children, 18 of whom received specific therapy, 10 for more than a year. Bronchograms were done on 103 patients without selection and showed abnormal findings in 70 and marked abnormalities in 50. Bronchiectasis was the most common evidence of damage, occurring in 70% of those with marked abnormalities. The percentage of children with abnormal bronchograms was similar in the treated and untreated groups. There is no evidence that antimicrobial therapy markedly shortens the course of tuberculous endobronchitis due to encroachment of caseous nodes on the bronchi. There is also no evidence that the use of specific therapy diminishes the incidence of sequelae in the bronchi and the parenchyma. Nevertheless, there is justification for treating children with tuberculous endobronchitis in the hope of diminishing the dangers of bronchogenic spread of the tuberculosis.

Preparation of Children for Tonsillectomy. H. J. Jones. M. J. Australia 1:32-34 (Jan. 11) 1958 [Sydney].

The effectiveness of preparing a child for hospitalization by the use of a booklet to reduce emotional disturbance after tonsillectomy was investigated by analyzing the behavior of 28 boys, 14 of whom received the booklet. The boys ranged in age from 5 years and 8 months to 6 years and 10 months. The booklet used was similar to several used in the United States. It was entitled "Going to Hospital" and contained 5 line drawings of hospital scenes and 4 pages of text. The account included details of admission procedure, preoperative examination and preparation, induction of and recovery from anesthesia, and the postoperative period in the hospital. A letter was sent with the booklet, suggesting its method of use and recommending that the child should color the illustrations. The behavior of each child was assessed prior to his admission to the hospital, while in the hospital, and for a period of 3 months after his discharge. The booklet seemed to have some effect, but the results were not statistically significant. Every child experienced some emotional reaction, which was mainly centered around changes in the sleep pattern, appetite, dependency, and temperament. These were at their maximum at 1 week, were considerably less at 1 month, and had usually disappeared 3 months after operation.

The investigation illustrated some of the difficulties that are met with in this type of research. As the socioeconomic and educational backgrounds of the mothers differed, so did their reports vary in detail and accuracy. The greatest difficulty was encountered in ascribing numerical quantities to emotional factors and in establishing a base line for each child from which to asseses variations in behavior. From the results of this study several improvements in the booklet could be made. It had been the belief that unpleasant as well as pleasant incidents should be included, so that a child knew that he would get a "prick in the arm" and that this might "hurt a little bit." In view of the finding that 10 of the children were afraid of "needles" beforehand, this reference to injections could well be omitted. All the mothers who received the booklet expressed their enthusiastic approval of its use and reported that their children enjoyed coloring the illustrations.

UROLOGY

A Treatment of Undescended Testicle in Infancy. C. G. Scorer. Arch. Dis. Childhood 32:520-522 (Dec.) 1957 [London].

Of 2,700 boys examined in the maternity department of a general hospital, 108 were found to have incomplete descent of 1 or both testes. In 89 of these the testis was found to descend during the first year of life. The remaining 19 boys included 5 in whom the testes were small and at the external ring, 3 testes had never been felt and were presumably within the inguinal canal or abdomen. and 11 persisted just outside the top of the scrotum. The author is especially concerned with the group of 11 boys who presented the latter condition with 3 distinctive features. 1. The testis was present at birth or appeared within the first few days of life. 2. It was of good size and firm consistency. 3. It did not change position during the many weeks or months of observation; it remained at the pubic crest or, at most, could be pushed 1 to 2 cm. below it. In several of these boys herniation into the unclosed processus vaginalis resulted, and in treating these hernias by surgical excision of the sac, the author found that the pathway from the external ring to the scrotum was blocked by a definite septum, or fibrous barrier, which had to be broken through by firm pressure before the scrotal cavity could be reached. This seemed to indicate that the cause of failure of descent is an obstruction and is not inherent in a deformity of the testis or a shortness of the cord. The rational treatment is, therefore, to remove the obstruction at an early age to enable the testis to descend spontaneously or to place the organ in its normal position. The policy of waiting and the subsequent use of hormones is unlikely ever to be rewarded.

The following operation was performed on the 11 boys. The superficial inguinal pouch is opened by an incision over the external ring. The testis and the cord with their coverings are dissected clear. The tunica vaginalis is opened and explored with a probe to find out if it communicates with the peritoneal cavity. If a hernia is present, the sac is dissected off the cord and ligated as high as possible. The lower end of the superficial inguinal pouch is then broken through with pressure by the little finger. A stitch of nylon is passed through the gubernaculum, which at this age is a thick and strong structure attached to the lower pole of the testis. Both ends of the nylon are threaded into the inguinal incision and out through the bottom of the scrotum, thus drawing the testis down toward its normal position. After closing the inguinal wound, the stitch is attached to the skin halfway down the inner side of the thigh. The stitch is kept in for 2 or 3 days, and tight napkins are not allowed for several days. Ten of the 11 infants treated now have the testis between 5 and 7 cm. from the pubic crest. The testis could not always descend fully because the scrotum was often smaller. Age at operation varied between 3 and 52 weeks, but the majority of the infants were under 3 months, and this appears to be the most satisfactory time.

OPHTHALMOLOGY

The Early Detection of Glaucoma: Results of 2,000 Routine Tonometries. H. Reed and J. E. L. Bendor-Samuel. Canad. M. A. J. 78:6-10 (Jan. 1) 1958 [Toronto].

The authors comment on the results of routine tonometry in 2,000 patients over 40 years of age. In 28 of these patients glaucoma had been diagnosed on the basis of the history and the clinical examination before tonometry was performed. Tonometry revealed raised intraocular tension in an additional 71 patients who appeared clinically normal. In 30 of these patients additional tests indicated the presence of glaucoma; in 13 the investigations were negative; 7 are still being followed up as doubtful; and 21 failed to attend for investigation. The authors consider it likely that most of the 7 doubtful patients will later show definite signs of the disease. Thus, about 2% of the patients over the age of 40 had early glaucoma without symptoms or obvious clinical signs.

Of the 30 patients who were believed to have glaucoma, only 6 patients had narrow angles. It is a common observation that there are relatively more wide-angle glaucomas than narrow-angle glaucomas. Five patients had field defects. The water test was performed in 16 of the 30 patients and proved positive in 10 of them; the mydriatic test was positive in 3 of 4 patients. These provocative tests will often prove conclusively that glaucoma is present; a negative result, however, does not necessarily exclude the disease. Tonography proved of great value both in diagnosis and in assessing the effectiveness of miotics. Routine tonometry by ophthalmologists is only part of the answer to this problem of unrecognized glaucoma. General physicians should be urged to include tonometry as part of every routine physical examination of patients over the age of 40. If the ocular tension is raised, the patient should be referred to an ophthalmologist for investigation. Medical schools should teach this simple test to the physicians of tomorrow.

Ocular Signs of Meningioma. F. W. Newell and T. C. Beaman. Am. J. Ophth. 45:31-40 (Jan.) 1958 [Chicago].

The records of 143 patients with histologically verified intracranial meningiomas were reviewed with special reference to the ocular signs and to the fact that, if the meningiomas are removed early in their course, there may be a return to normal neural function. There were 14 patients with meningioma of the tuberculum sellae, 11 of whom had optic atrophy with vision in 1 or both eyes reduced to less than counting fingers at 2 ft. In 2 of these patients roentgenograms of the skull and contrast radiography did not indicate the abnormality, but the tumor was found by surgical exposure. Meningioma should be thought of as a likely cause of reduced vision in middle-aged patients with progressive optic atrophy not arising from glaucoma, vascular disease, or syphilis. Meningioma of the sphenoidal ridge was found in 15 patients. Symptoms varied with the portion of the ridge involved, but optic atrophy of the homolateral eye and proptosis were the outstanding signs. Roentgen-ray examination will frequently aid in the diagnosis, since meningiomas in this area, particularly those involving the pterional portion of the sphenoidal ridge, cause a characteristic hyperostosis.

The optic nerve within the orbit may be involved in a meningioma that originates within the cranium or at the optic foramen or within the orbit itself. The chief symptoms of optic nerve meningioma are decreased vision and proptosis which are slowly progressive. Either may occur without the other. Two patients with meningioma extending along the optic nerve sheath were seen in this group. Proptosis was the outstanding symptom in the first, and reduction of vision in the second. The reports of patients with meningioma extending along the optic nerve sheaths, together with the findings in these 2 patients, indicate the futility of purely ocular surgery in their management. The removal of such tumors is the province of the neurosurgeon who can unroof the orbit and inspect the optic foramen. Tumors of the olfactory groove attain a large size before causing visual symptoms. Of 10 patients with meningiomas in this area, the majority had no ocular signs, and the visual signs that did occur aided in localizing the tumor in only 1 instance.

INDUSTRIAL MEDICINE

Hearing Impairment from Noise of Pneumatic Drills. L. Risch. J. Laryng. & Otol. 71:846-849 (Dec.) 1957 [London].

The author tested the hearing of 9 pneumatic-drill operators engaged in road repair work. Their ages ranged from 30 to 55 years. There was an interval of a few minutes between the end of drilling and the test, which was carried out in a quiet, acoustically treated room. The men were questioned concerning their experiences connected with drilling and especially concerning tinnitus and hearing of speech. The intensity of the noise produced by the drill was measured. At a distance of 6 ft. the noise from a single drill had an intensity of 95 db. Probably the intensity is higher between 2 machines, when several drills are used simultaneously in a team, but measuring this was not feasible. While this was too small a group for far-reaching deductions, the author believes that the following conclusions can be made: It is possible for some individuals to be exposed for many hours a day to very loud noise (at least 95 db.) for several years without necessarily suffering serious damage to the function of hearing. Three of the tested men worked with pneumatic drills for 10 years, and in 2 (1 started at the age of 20 and the other at 25) the hearing was only slightly impaired for the highest frequencies. In the third man, who was 55 years old, there was a more marked impairment in 1 ear. In the majority of pneumatic-drill operators the noise does impair the hearing, and in a few the impairment can be of such a degree that hearing for speech in everyday life can be seriously affected. In severe unilateral deafness from other causes, such as was discovered in 1 of the men tested, even a moderate impairment for the higher notes in the good ear is bound to have a serious effect on hearing speech. Such a person should be discouraged from undertaking this type of work. The comparatively slight impairment of hearing in the majority, in spite of exposure to this severe and unpleasant noise, indicates that the use of proper earplugs could prevent damage to the ears from this particular type of industrial noise.

Roentgen Resurvey of Cement Workers. O. A. Sander. A. M. A. Arch. Indust. Health. 17:96-103 (Feb.) 1958 [Chicago].

One hundred ninety-five cement workers who had had from 20 to 45 years of exposure to raw, mixed, or finished cement dust were studied by comparing their 1934 and 1937 chest roentgenograms with recent ones. One hundred twenty of the 195 cement workers (or 61.5%) were classified as having normal chest roentgenograms; the films of 68 (or 35%) showed "moderate linear exaggeration"; the films of 6 (or 3%) showed "marked linear exaggeration with ill-defined micronodular shadows." Because of the small size of these round shadows (not over 1 mm.) and because of the normal appearance of the root shadows, these 6 cases do not resemble silicosis and cannot be so diagnosed. Only 1 of the 195 patients showed clear-cut micronodulation, the exact cause of which could not be determined.

It is suggested that the linear exaggerations and the micronodulations appearing on the roentgenograms are due to retention of some of the dust in the lymphatics of the lungs. These changes did not resemble silicosis in any case because of the lack of enlargement of the root lymph nodes, and it is suggested that they may be due to direct shadows cast by focal collections of retained dust and not by fibrosis. Exposure to finished cement dust alone results in no recognizable x-ray changes even after upwards of 30 years of exposure, indicating that finished cement is largely absorbed and that there is little or no retention and no resulting fibrosis. Inhalation of raw, mixed, or finished cement dust does not predispose to tuberculosis or emphysema.

THERAPEUTICS

Antituberculous Chemoprophylaxis with Isoniazid: Preliminary Note. A. O. Zorini. Dis. Chest. 33:1-17 (Jan.) 1958 [Chicago].

The author administered isoniazid to 600 children between the ages of 4 and 11 years. These children came from tuberculous families, most of whom had positive reactions to the tuberculin skin test but did not have clinical or radiologic manifestations of active tuberculosis. Radiologic examination of the children showed signs of progressive infection in the forms of hilar calcification, parenchymal calcific foci, enlargement of hilar shadows without perifocal reaction, and alteration of the bronchovascular markings. Circulating antibody determination was normal in most children. The erythrocyte sedimentation rate was normal. Slight eosinophilia was noted in some. Special preparations, such as fruit jelly and chocolates containing 50 and 100 mg. of isoniazid and biscuits containing 50 mg. of isoniazid, were given to small children, while isoniazid in tablets or syrups was given to older children. The drug was administered in an initial daily dose of 10 mg. per kilogram of body weight, followed by an increment of 5 mg. per kilogram of body weight daily each week, until a dose of 20 mg. per kilogram of body weight daily was attained. The daily dose did not exceed 800 mg. in any of the children. Fifty per cent of the children received chemoprophylaxis for 4 months, and the other 50% for 2 months. The drug tolerance was excellent in nearly all the children with regard to both daily and total doses. Discontinuation of treatment was necessary in only 4 of the 600 children, because of a relapsing dermatitis in 2 and because of gastroenteritis in 2.

The clinical improvement in nearly all the children was featured by increase in body weight. In the 100 children followed by controlled intradermal testing, a nearly equal number of increased, stationary, or decreased degrees of reactivity were noted. Negative reactions were not observed. These data show that prophylactic treatment with high doses of isoniazid can be carried out without untoward reactions in tuberculin-positive or tuberculin-negative persons who do not have specific, active pulmonary lesions. The author is convinced that simple isoniazid chemoprophylaxis is capable of exerting immediate therapeutic action against existent tubercular foci within lymph nodes and other organs and will furnish through the isoniazid-resistant mechanism or some other mechanism a greater resistance against an endogenous or an exogenous reinfection. It is important to repeat isoniazid treatment at appropriate intervals during the second and the third year, especially in infants born of tuberculous parents. Canetti's proposal of combining chemoprophylaxis with a BCG strain vaccination, resistant to isoniazid and catalase-positive, would be difficult to put into practice and would carry with it a certain danger. It should, however, be given tentative consideration in those countries in which BCG vaccination is widely used and psychologically accepted.

Short-term Penicillin and Dihydrostreptomycin Therapy of Streptococcal Endocarditis: Results of the Treatment of 35 Patients. R. Tompsett, W. C. Robbins and C. Berntsen Jr. Am. J. Med. 24:57-67 (Jan.) 1958 [New York].

Seventeen men and 18 women, between 17 and 67 years of age, with endocarditis caused by penicillin-susceptible streptococci, were given a 14-day course of concurrent administration of 500,000 units of potassium penicillin G intramuscularly every 2 hours (a total daily dose of 6 million units) and 0.5 Gm. of dihydrostreptomycin 4 times a day or 1 Gm. twice a day intramuscularly (a total daily dose of 2 Gm.). After the completion of treatment blood cultures were usually taken 3 times a week for the ensuing 2 weeks and at longer intervals thereafter for at least 3 months. Definite bacteriological cure was achieved in 24 patients (69%) and probable bacteriological cure in an additional 8 patients (23%). Bacteriological relapse was observed in 3 patients (about 10%), 1 of whom relapsed twice.

Concurrent administration of penicillin and dihydrostreptomycin probably represents the most satisfactory bactericidal, antimicrobial therapy available today for infections caused by strains of streptococci which are sensitive to penicillin in in vitro tests. The use of this therapy, however, for a period of as short as 14 days falls short of the goal of antimicrobial therapy, which is bacteriological cure in all cases. As it is impossible to predict which patients will not achieve cure with short-term therapy, it may be advisable to extend the routine therapy of endocarditis caused by streptococci for an additional 7 to 14 days beyond the initial 2 weeks, in the hope that the remaining 10% of the patients will be cured by the first course of therapy. Valid theoretical as well as statistical reasons are adduced to support this advice. There was no significant change in the in vitro sensitivity to either penicillin or streptomycin in the strains isolated after unsuccessful short-term combined therapy, indicating that concurrent administration of the 2 antibiotics prevented the emergence of streptomycin resistance.

PATHOLOGY

Carcinoids. G. Nese. Tidsskr. norske lægefor. 77: 947-952 (Nov. 1) 1957 (In Norwegian) [Oslo].

Report is presented of 55 cases of carcinoids, in 21 men and 34 women, from the Institute of General and Experimental Pathology in the Rikshospital and from Kreyberg's personal material. The youngest patient was 11 years old, the oldest was 80; 26 patients were under 30. Of the 13 malignant carcinoids, in 10 men and 3 women, 1 was in the appendix, 4 were in the ileum, 6 were ileocecal, 1 was in the ascending colon, and 1 was in the stomach. Five of the men and 1 woman died. None of the 42 patients with benign carcinoids have died, but 1 patient had a recurrence and was reoperated on. The longest follow-up period for benign carcinoids was 24 years and for malignant carcinoids, 8 years. Carcinoids in the appendix, usually benign, occur most often in young women. Carcinoids in other regions occur far more often in older patients, mostly men. Benign carcinoids may become malignant after some years, but they generally remain unchanged for decades. Treatment is operative. The prognosis for patients with benign carcinoids is good when the tumor is removed, and it is not wholly bad for patients with metastasizing carcinoids if the primary tumor is removed. In 4 patients with malignant carcinoids and metastases, examination of the urine gave evidence of an increased serotonin content.

Further Studies on the Transmission of Staph. Aureus. R. Hare and M. Ridley. Brit. M. J. 1:69-73 (Jan. 11) 1958 [London].

The authors made extensive surveys of the skin and clothing of 12 men and 3 women who were nasal carriers of Staphylococcus pyogenes var. aureus. Isolation of Staph. aureus was carried out on nutrient-agar plates containing phenolphthalein diphosphate. Six of the 15 carriers had much less contamination of the skin or clothing than the remaining 9. The latter had Staph. aureus sometimes in considerable numbers on the skin and usually on sites having direct contact with the nose, i. e., the face, palms, and fingers. Forearms and wrists were seldom contaminated. The hair, chest, abdomen, back, and legs were either free or the numbers of Staph. aureus were small. The handkerchief, the only item of clothing likely to have direct contact with the nose, was usually heavily contaminated. So, too, was the pocket in which the handkerchief was kept, but staphylococci could also be found on one or another site on the remainder of the clothing and certainly on that of the front of the body. Contrary to expectation, there was no correlation between the number of Staph. aureus in the nose and the intensity and extent of contamination of the skin or clothing. Nevertheless, if the carriers studied be considered representative of carriers in general, about 60% have sufficient numbers of these bacteria on various sites of the skin and clothing to enable them to transmit their own organisms to other persons with whom they come into direct physical contact by means of objects, such as blankets or towels which they have touched, or as a result of dispersal into free air during movement.

Widespread contamination of 1 of the 12 male carriers, who was a healthy person with no pyogenic or other lesions of the skin and only a few Staph. aureus of a different phage pattern in 1 nostril, made it appear probable that the organisms were derived from some situation other than his nose, where there was sufficient warmth and moisture to enable them to multiply. In this individual large numbers of the organisms were obtained from the perineum. However, there was so heavy a growth of coagulase-negative skin staphylococci from the latter area that, without the assitance afforded by the phenolphthalein diphosphate medium, the colonies of Staph. aureus might have been missed. The clothing in apposition to the perineum, such as the legs and seat of the drawers, was heavily contaminated. There was no evidence that the perineum had been contaminated by Staph. aureus coming from the feces. It seemed that the perineum of this particular carrier had been the primary source of the Staph. aureus on his skin and clothing all along, and that this species was able to multiply on this area of the body. Organisms from this reservoir were able to reach other sites on the skin and clothing and be dispersed during movement to much the same extent as with nasal carriers. Thus, when possible sources of infection are being sought, the existence of nonnasal carriers of Staph. aureus must not be overlooked.

RADIOLOGY

Clinical Impressions in 100 Consecutive Cases of Carcinoma of the Urinary Bladder Treated by Supervoltage. C. A. Cuccia, S. Jones and C. M. Crigler. J. Urol. 79:99-109 (Jan.) 1958 [Baltimore].

All patients with carcinoma of the bladder seen in the urology department at the M. D. Anderson Hospital, Houston, Texas, were evaluated with the radiotherapy department for disposition. The emphasis since April, 1954, has been directed toward radical irradiation with supervoltage. Since this program was started, external irradiation with supervoltage has been used in some lesions which otherwise could have been treated with interstitial or intracavitary irradiation. The aim was to treat the empty whole bladder rather than part of it. This decision to treat the whole bladder and to prefer external irradiation was based on Roger Baker's demonstration of circumferential lymphatic spread of cancer cells along the muscle wall. Data are presented on 100 patients with cancer of the bladder treated with supervoltage from April, 1954, to September, 1956. All were treated with either the radio cobalt (Co^{60}) irradiator or the betatron.

In the first year the patients were alternated between the 2 machines, with the aim of finding out whether there were differences in the tolerance, reactions, and immediate results. When these factors were found to be fairly equal, the use of the betatron was preferred because of better volume distribution and because it avoided the late fibrosis of subcutaneous tissue in the suprapubic region which sometimes resulted from treatment with Co^{60}. The use of Co^{60} is now reserved almost exclusively for patients with involvement of the anterior wall of the bladder with extension into the prevesical space. A minimal tumor dose of 6,000 r was applied to the whole bladder in 5 weeks with a 3-field arrangement. The fields, 1 anterior in the suprapubic region and 2 posterior at the level of the sacroiliac joints, range in size from 6 by 8 cm. to 8 by 10 cm. By using different sizes of portals and different degrees of angulation of the posterior fields, the primary tumor and the perivesical extensions were adequately treated. On the betatron, the fields were loaded with a ratio 2:1 in favor of the anterior portal. This spares the rectum to some extent. In some patients who had previous suprapubic bladder surgery, the tumor dose was reduced to 5,500 r.

The impressions gained so far indicate that patients with disease extending to the pelvic wall and those with less extensive disease but in poor general condition are better treated with a palliative technique, because those treated with high doses had poor tolerance and more complications. Previous irradiation of any type is a limiting factor. There appeared to be a relationship between recent suprapubic bladder surgery (especially partial cystectomy) and contracted bladder after irradiation. Presence of bladder neck obstruction or severe cystitis decreased the local tolerance for irradiation. Urinary diversion prior to irradiation may be essential in some cases. Women, especially those in the older age groups, tolerated the treatment less satisfactorily. Surgery demonstrated that irradiated tissue has diminished healing capacity. The analysis of those with superficial low-grade lesions revealed that the potentiality of the bladder mucosa to form new lesions is not eradicated by irradiation. Therefore, transurethral surgery is best for low-grade, low-stage lesions. Recurrences that reveal advancement in stage and/or in grade or lesions that cannot be adequately removed transurethrally can be eradicated by irradiation. High-grade lesions, including undifferentiated and squamous carcinoma and lesions in stages B_2 and C, should be treated radically. Supervoltage therapy in this group was encouraging, and it appears to have a definite place in the management of carcinoma of the urinary bladder.

PUBLIC HEALTH

Chronic Toxicity of 3-(*p*-Chlorophenyl)-1, 1-Dimethylurea (Monuron). H. C. Hodge, E. A. Maynard, W. L. Downs and R. D. Coye. A. M. A. Arch. Indust. Health 17:45-47 (Jan.) 1958 [Chicago].

Monuron [3-(*p*-chlorophenyl)-1, 1-dimethylurea] has been found to be an effective herbicide for the control of many annual and perennial grasses and herbaceous weeds. When applied at rates of 16 to 64 lb. per acre, it has been found to prevent growth of nearly all vegetation for a period of many months. This control of vegetative growth has proved useful in such areas as highway right-of-ways, railroad yards and right-of-ways, lumber yards, petroleum tank farms, drainage ditches, and industrial plant sites. When used at a much lower application rate, from 1 to 6 lb. per acre, Monuron has proved valuable in selective weed control among crops, such as asparagus, citrus fruits, cotton, grapes, onions, pineapples, spinach, and sugar cane. In recognition of the possible exposure of humans and animals to Monuron, extensive chronic toxicity tests were completed prior to establishment of the residue tolerances. This report describes the results of feeding Monuron for 2 years to rats and for 1 years to dogs.

In these studies 25 mg. of Monuron per kilogram of body weight has been shown to be a noneffective dose even on long-continued administration. Approximately 10 times this dose was associated with growth retardation, a slight anemia, and liver and spleen weight increases (in female rats). The noneffective level, if expressed as the concentration in the diet to give the same dose for rats and dogs, falls in the range of 250-500 ppm of the diet. This concentration range exceeds by 35 to 70 times the residue tolerance figure for asparagus and by 250 to 500 times the residue tolerance figure for most crops. If man is no more susceptible to the toxic effects of Monuron than are rats and dogs, and assuming that only a minor fraction of the human diet will contain Monuron, the margin of safety in the established residue tolerances seems adequate.

Care of Children with Nephrosis and Cystic Fibrosis of the Pancreas in a Crippled Children Program. S. G. Dodd and V. Shannon. Am. J. Pub. Health 48:15-21 (Jan.) 1958 [Albany, N. Y.].

Children suffering from nephrosis and cystic fibrosis of the pancreas have recently been included in the Connecticut State Department of Health's program for crippled children. The authors believe that the inclusion of such children is appropriate, as these diseases are amenable to medical management, but they are catastrophic to the affected individuals and families and frequently require the use of resources beyond those of the family. Connecticut is the first state to take on these new aspects of crippled children's care. The services available under the nephrosis and cystic fibrosis programs are similar to those given to children with other crippling conditions. The programs follow the purposes set forth by the Children's Bureau: to provide skilled medical, surgical, nursing, social, and physical therapy services for children in hospitals, convalescent homes, foster homes, and in their own homes, and to cooperate with other resources in providing and promoting the development of services to crippled children.

Children up to 21 years of age who reside in the state are eligible for diagnostic service. Eligibility for treatment is determined by several factors, including diagnosis, lack of other treatment facilities, need for a planned program of medical care rather than provision of an isolated treatment, and the economic situation of the family. The programs may assist in care of children at home by providing medical consultation, laboratory and x-ray work, and some medication. Funds are also available for hospital and convalescent care. Depending upon the need, continuing medical, social, nutritional, and public health nursing services are provided. The parents are encouraged to maintain close touch with their family physician at all times, and arrangements are made with his foreknowledge and approval. For a child to receive aid, a referral is usually made by the family physician or pediatrician. If the family contacts the department first, they are requested to give their physician's name, and permission to confer with him is obtained. Case histories are cited to explain how the programs function.

BOOK REVIEWS

Introduction to Anesthesia: The Principles of Safe Practice. By Robert D. Dripps, M.D., Professor and Chairman, Department of Anesthesiology, Schools of Medicine, University of Pennsylvania, Philadelphia, James E. Eckenhoff, M.D., Professor of Anesthesiology, Schools of Medicine, University of Pennsylvania, and Leroy D. Vandam, M.D., Clinical Professor of Anesthesia, Harvard Medical School, Boston. Cloth. $4.75. Pp. 266, with 47 illustrations, line drawings by Leroy D. Vandam. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W. C. 2, England, 1957.

The authors of this work, which originally was privately printed in 1949 for use in the department of anesthesiology of the Hospital of the University of Pennsylvania, are well known. They have covered the field of anesthesiology rather well and have added a section on the management of narcotic poisoning. They have limited themselves to few words, a practice which calls for great accuracy of expression. This third edition is the first which has been made available to the profession generally. It is printed on good paper, is easily read, and is fairly well indexed. It is a pleasure to find a book as well done as this one. Anyone who is interested in anthesiology will probably want to own it.

The Lower Urinary Tract in Childhood: Some Correlated Clinical and Roentgenologic Observations. By Sven Roland Kjellberg, Nils Olof Ericsson, and Ulf Rudhe. Cloth. $18.50. Pp. 298, with 265 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11; Almqvist & Wiksells, 26 Gamla Brogatan, Stockholm C; Box 47, Uppsala, Sweden, 1957.

In this unusual book the subject matter measures up to the high standard of investigative work that has come to be the expected as routine from Scandinavia. The department of roentgenology at the Karolinska Sjukhuset, Stockholm, has always pioneered in new types of investigation. Some have thought that many of these roentgenologic examinations were superfluous, in that the information could be obtained more easily by other methods, but it must be admitted that persistence has illuminated many obscure problems. Micturition cystourethrography, which forms the basis of this book, falls into this category. The conslusions reached are sound. The book is more than a treatise on voiding cystourethrography in infants and children; it is also a comprehensive summary of current opinion of various pediatric-urologic problems, including an excellent bibliography.

The first chapter is a well-written treatise on the embryology of the genitourinary tract, stressing the important failures in development that result in the more commonly encountered anomalies. In chapter 3, the authors describe their ingenious apparatus for making simultaneous lateral and frontal views with the child sitting in a specially designed canvas swing. The cystographic medium used will also surprise most American urologists, as it consists of a thin solution of barium sulfate (250 Gm. in a 1,000-cc. mixture). The authors have found that, in contrast to mediums containing iodine, it is nonirritating; thus, the child has no discomfort and can be induced to void without much trouble. Films are exposed during the act of micturition. The authors first present films to demonstrate the appearance of the normal bladder and urethra. Although the frontal views will be readily interpreted by the reader, interpretation of the lateral views will require some study. The rest of the book is devoted to the use of the voiding cystourethrogram in the following conditions: ectopic ureter and urethrocele, the neurogenic bladder, bladder neck obstruction, congenital urethral valves, urinary tract infection, stricture of the urethra, intersexuality, and enuresis.

Most urologists believe that cystography has little place in the diagnosis of ectopic ureters and ureterocele. The authors demonstrate that the voiding cystourethrogram is most helpful in demonstrating large ureteroceles lying close to the vesical neck or just inside the urethra that may be pushed aside or collapsed by the passage of a cystoscope and thereby overlooked. They also show with what astounding frequency an ectopic ureter which opens into the urethra can be filled and visualized with contrast medium as the patient voids. This should be a distinct contribution to diagnosis in such cases, because these orifices are notoriously difficult to visualize and catheterize cystoscopically. Another new concept is the demonstration that spasticity of the external sphincter in neurogenic disease and urinary infection may often be demonstrated by the voiding cystourethrogram but not by the retrograde method. One of the best demonstrations of the value of the voiding cystourethrogram is in the case of congenital urethral values. This has always been a most difficult diagnosis to make cystoscopically, and many cases are overlooked. The authors present films and statistics showing that their method is almost 100% accurate. They admit that in some cases it may be a little difficult to differentiate a valve from a spastic external sphincter but that with moderate experience

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These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

roentgenologic diagnosis is accurate. This book should be read by all urologists and roentgenologists.

An Introduction to Medical Mycology. By George M. Lewis, M.D., Professor of Clinical Medicine (Dermatology), Cornell University Medical College, New York, Mary E. Hopper, M.S., J. Walter Wilson, M.D., Clinical Professor of Medicine, University of Southern California, Los Angeles, and Orda A. Plunkett, Ph.D., Professor of Botany, University of California at Los Angeles. Fourth edition. Cloth. $15. Pp. 453, with illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1958.

The new edition of this volume, which for 18 years has been a standard textbook in medical and, in particular, dermatologic mycology, represents a significant improvement over the preceding editions both from the practical and the theoretical viewpoints. Drs. Wilson and Plunkett, as co-authors, have rewritten the sections dealing with deep mycoses and contaminants respectively. The nomenclature has been brought up to date, and the results of some of the newer experiments have been incorporated. Descriptions of the culture biopsies of many of the dermatophytes are included. This volume is an introduction to rather than a treatise on medical mycology. This explains the fact that no attempt is made to discuss or weigh the evidence for and against controversial subjects. It might have been preferable to consider black and white piedra separately. Trichophyton concentricum, which causes tinea imbricata, is separated from the other members of the genus Trichophyton, probably because of the difference in the clinical disease produced. It was a fortunate decision on the part of the authors to combine the clinical and laboratory phases of the various mycoses instead of separating them as in previous editions. The illustrations are excellent and much more numerous than in the previous editions. This text can be highly recommended for students and practitioners of medical mycology.

Operative Obstetrics. By R. Gordon Douglas, Professor of Obstetrics and Gynecology, Cornell University Medical College, New York, and William B. Stromme, Attending Obstetrician and Gynecologist, Northwestern Hospital, Minneapolis. Foreword by Nicholson J. Eastman. Cloth. $20. Pp. 735, with illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1957.

The thoroughness, conciseness, and clarity with which the authors have presented their subject marks this book as a library necessity. It fills a long felt need, both for specialists and for teaching residents. The profusion and appropriateness of the pictures, many times with sketches to supplement the photographs, indicate the thought that went into this valuable book. The section on forceps delivery is particularly well done. The rationale for the use, not only of the forceps but also of the type of forceps to be used is clearly explained. The chapters on preoperative, operative, and postoperative care cover a wealth of material. The authors also discuss the management of the complications of pregnancy, both local and systemic, the indications for anesthesia, and the indications and contraindications for many other procedures. Sound judgment is shown throughout this much-needed textbook.

Pediatric Roentgenology. By Dr. M. A. Lassrich, Prof. Dr. R. Prévôt, and Prof. Dr. K. H. Schäfer. Edited by Prof. Dr. K. H. Schäfer. Translation from German provided by James T. Case, M.D., D.M.R.E., Director, Memorial Cancer Foundation, Santa Barbara, Calif. Cloth. $28. Pp. 333, with 700 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W. C. 1, England, 1957.

This book represents the first appearance in German of a treatise dealing with pediatric roentgenology in more than 20 years. The subject matter and illustrations are presented in atlas form, but the legends, although concise, contain the essential clinical and roentgenologic data. The introductory remarks at the beginning of each chapter adequately cover the technical details. Emphasis has been placed on the subjects of practical importance, concentrating attention on the thoracic and abdominal organs, but the other structures, such as the skeletal system, have not been neglected. The illustrations are beautiful and well selected. The reproductions of roentgenograms are in the positive phase. Where indicated, explanatory schematic drawings have been used to good advantage. There is no bibliography. Dr. Case is to be congratulated for the excellent translation of this book into easily readible form, transferring the thoughts and ideas of the authors accurately. This book is highly recommended for radiologists, pediatricians, and all physicians interested in the diseases of children.

Abdominal Operations by the Vaginal Route. By Paul Werner, M.D., and Julius Sederl, M.D. Translated by L. M. Szamek, M.D. With foreword by Richard W. Te Linde, M.D. Cloth. $9. Pp. 165, with 120 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 4865 Western Ave., Montreal 6, Canada; Pitman Medical Publishing Company, Ltd., 45 New Oxford St., London, W. C. 1, England, 1958.

This book is an excellent translation of the one published by the authors in 1952. This does not diminish its quality or value. Dr. Werner continued to perform intricate vaginal operations almost until the time of his death. He was one of the foremost operators, not only in Europe but in the world. His vast experience as a teacher and master technician is evident in the beautiful and instructive drawings. Even the German edition was most instructive for those who could not read German, because of these illustrations. The price of the German edition was $11. The English translation is only $9. It should prove helpful to any surgeon or gynecologist who is interested in perfecting his technique of vaginal operations.

QUESTIONS AND ANSWERS

NOISES IN THE HEAD

To the Editor:—*Some patients complain of ringing or buzzing in the head. This is definitely not described as a patient usually describes a tinnitus, in that it is not lateralized and, when specifically asked regarding whether the sound or sensation is coming from the ears, the answer invariably is, "No, it is in my head." These patients describe this as being continually present day and night, never particularly interfering with sleep but definitely disturbing them during the day. The patient may indicate that for a brief period of time it may suddenly leave and return just as suddenly. Most of these subjects claim that it has been present for years. Examination by otolaryngologists, complete neurological examinations, general physical examinations, and the duration of these symptoms fail to reveal the cause. The patients are not helped by sedatives, tranquilizers, or vasoconstrictors, such as ergotamine tartrate and caffeine. Reassurances to the patient as to the absence of any discernible organic disease and referrals to psychiatrists likewise fail to help. What is the cause of this distressing phenomenon?* *M.D., Washington.*

Answer.—The problem of buzzing, ringing, or humming in the head in a person with no neurological sign, abnormal otological or aural finding, obvious vascular disease, or hypertension presents a vexing problem. One should consider a large aneurysm of the cartoid artery or the circle of Willis, an arteriovenous aneurysm, a variant of labyrinthine hydrops, preternatural pulsation frequently heard at night in people with much arteriosclerosis, with loud cardiac murmurs, or with a sound-producing mechanism elsewhere in the body, spasmodic repetitive contraction of the stapedius muscle, and the possibility of serious mental aberration with neurosis or with hallucinations.

Answer.—The condition described is fairly common among tense or introspective persons. It is probably an exaggeration of the sound normally heard in a sound-proof room. This can be verified by anyone if he gives his attention to it. If those who complain of the sounds described have their attention distracted from them, or if they are asleep, the sounds are not heard. It is therefore considered a functional phenomenon arising from awareness and magnification of a normal occurrence.

RECURRENT AXILLARY AND INGUINAL ADENITIS

To the Editor:—*A 43-year-old man has noted blood and pus in his stools for one year. He has also had recurrent axillary and inguinal adenitis, which has never suppurated. Sigmoidoscopy and barium enema have revealed a cauliflower granulomatous lesion involving the rectal ampulla and 3 or 4 cm. of the rectum extending immediately above the anal canal. There is no distinct stricture or fistula, and the sigmoidoscope can be passed into the sigmoid, revealing a normal mucosa above. The serum albumin is 2.5 Gm. per 100 cc., and the globulin is 5.3 Gm. per 100 cc. Physical examination is negative except for the adenopathy, with nodes of 1 to 1.4 cm. in diameter which are firm, mobile, and nonindurated. Chest x-ray and serologic examination are normal. Rectal biopsy (four separate specimens) revealed chronic inflammation without giant cells. A Frei test was negative at 48 hours, but a distinct nodule was seen at the test site 10 days later. 1. Is venereal lymphogranuloma in this patient likely? Are strictures necessary for such a diagnosis in the male? Is such an infection likely to be the result of homosexual practice? 2. Does the Frei test antigen lose its potency even though the expiration date is given as March, 1958? 3. Is the complement fixation titer affected by performance of the test? 4. Are there any special isolation techniques for identification of the virus from an inguinal node? How should the biopsy specimen be handled? 5. Does sarcoid produce this type of lesion? Must any other granulomatous process be considered? 6. Would liver biopsy aid in establishing the diagnosis? Has the liver been shown to be involved in venereal lymphogranuloma? 7. What is the accepted form of therapy of this disease?*

Leonard Breslaw, M.D., Los Angeles, Calif.

Answer.—1. The findings in this case are diagnostic of venereal lymphogranuloma. Note the reversion of the albumin-globulin ratio of the serum proteins and the positive intracutaneous Frei test in the form of a distinct nodule seen at the site 10 days later. This evidence would outweigh the "negative Frei test" reported. Nodule formation is as important as an erythematous reaction at the site of

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

injection. The presence of strictures is not essential to the diagnosis. Aberrant sexual acts (anal coitus) are not the only means of development of this disease. 2. The Frei test antigen does not lose potency for at least two years. 3. The complement fixation titer is not affected by the intracutaneous Frei test. 4. Animal transfers (yolk sac from chick embryo and mouse brain) are the special techniques for the identification of the virus. There is nothing special about the surgical removal of a lymph node for microscopic studies (Kornblith, *Surg. Gynec. & Obst.* 63:99, 1936). 5. Sarcoid does not histologically resemble the lesion under discussion. The only other granulomatous process is, possibly, foreign body granulomas. 6. Biopsy of the liver would not aid in the diagnosis. The liver is not involved in venereal lymphogranuloma. 7. Ordinarily, a course of orally administered broad-spectrum antibiotics with short courses of large doses of sulfonamides should be given for about two months, but, since cancer is so frequently associated with or superimposed on venereal lymphogranuloma, the antibiotic and chemotherapeutic therapy in maximum tolerable dosages should be limited to only two weeks. If no recession of the rectal lesion is observed, local excision of the entire lesion (total biopsy) should be performed and followed by immediate frozen section microscopic examination. If cancer is discovered, an abdominoperineal resection should be then carried out. If not, antibiotic therapy should be continued for many weeks after operation.

MONTHLY SUICIDE RATES

To the Editor:—*The county coroner has noted a great increase in the suicide rate in this area from the early part of December until the middle of January in each of the last four years. Is this in conformity with the national findings? Are there any reasons for this apparent increase during this period of the year?*

Robert W. Viehe, M.D., Whitefish, Mont.

Answer.—There are no statistical data available that would cover such an unusual period as "the early part of December until the middle of January." Available statistical data are grouped, on the national level, according to calendar months. In addition, the National Service of Vital Statistics has not as yet published reports for 1956 and 1957.

The deaths due to suicide in the United States from 1951 to 1955, according to monthly distribution, are given in the table. From these figures the following deductions can be made: The number of suicides in the combined two months of January and December, 1952, has declined by 12 from the number recorded for 1951. Figures for 1953 show an increase of 13 over 1952. In January and December of 1954, the number of suicides increased by 50; in the same two months of 1955, the increase is 42 above the previous year. Thus, it seems that there is a continuous increase in the number of suicides in January and December of every year, 1952 through 1955. These figures are misleading, however, if taken alone, inasmuch as the total number of suicides in the entire United States increased in 1953, 1954, and 1955. The increase during these years can be calculated from the table: 308 in 1953, 409 in 1954, and 404 in 1955. The bimonthly averages in these years, on the national level, are significantly higher than the increases during the months of January and December.

With the figures of the average monthly increase and the comparison of these averages to the actual increase in January and December of the corresponding years, a computation can be made which would show that the increase of suicides in the named months is below the average expected. It appears, even without this computation, that the increase in the number of suicides during the months of January and December, 1953 through 1955, does not show any significant deviation from the increase of suicides during any other month, on the national level.

Death Due to Suicide in the United States from 1951 to 1955 According to Monthly Distribution

	1951	1952	1953	1954	1955
Jan.	1,299	1,325	1,311	1,333	1,369
Feb.	1,198	1,214	1,230	1,240	1,224
March	1,343	1,398	1,435	1,426	1,529
April	1,423	1,493	1,444	1,444	1,556
May	1,532	1,442	1,467	1,448	1,518
June	1,291	1,310	1,360	1,458	1,377
July	1,329	1,303	1,334	1,412	1,370
Aug.	1,321	1,224	1,271	1,266	1,405
Sept.	1,276	1,179	1,292	1,357	1,351
Oct.	1,407	1,230	1,288	1,333	1,399
Nov.	1,212	1,207	1,246	1,340	1,357
Dec	1,278	1,242	1,269	1,299	1,305
Total	15,909	15,567	15,947	16,356	16,760

HEREDITY AND MYOPIA

To the Editor:—*What are the probabilities of errors of refraction in offspring of mates, each of whom have stationary simple myopia of 2-D severity?*

M.D., Michigan.

Answer.—It is fallacious to give genetic prognostication for myopia taking into account the total refraction of the eye (clinical refraction). This would be possible only if the mode of transmission and varying course of each of the following variable refraction components were known: (1) corneal refraction, (2) depth of anterior chamber, (3) refraction of the lens, and (4) axial length of the eye. The total, or clinical refraction, is the combined result of the above four factors. There is a great need for genetic studies on the inheritance of each of these factors. There are a number of pedigrees of clinical refraction showing dominant inheritance. Some pedigrees suggest intermediate inheritance. In some families in which dominant inheritance is exhibited a wide range in the severity of the myopia exists; in others, there is a rather remarkable consistency in the degree of myopia. A high myopia tends to exhibit recessive or sex-linked recessive modes of transmission. This question provides no data concerning the presence of myopia in the siblings of the mates or in their respective parents and thus gives insufficient data on which to base a genetic prognostication. If it is assumed, however, for purpose of speculation, that both mates are heterozygous for a dominant gene for myopia, it can be anticipated that 25% of the offspring will be homozygous for the myopic gene, 50% will be heterozygous for the myopic gene, and 25% will be homozygous for the normal gene. Thus, it can be anticipated that the offspring in each pregnancy has three chances in four of being myopic. This implies a dominant gene for myopia capable of being interpreted only in the light of the total clinical refraction and is not specifically dependent on the previously discussed refraction components.

Reference

Sorsby, A.: Genetics of Ophthalmology, St. Louis, C. V. Mosby Company, 1951, p. 88.

VARIED REACTIONS WITH TEST FOR UROBILINOGEN

To the Editor:—*In an office where Ehrlich's aldehyde test for urobilinogen is used routinely, in certain cases instead of albuminuria a milky, orange-colored reaction has been seen when the reagent was added to urine. What causes this?*

Michael H. Berger, M.D., Quito, Ecuador, South America.

Answer.—This and similar phenomena have been noted many times in cases where the urine test is negative for protein but positive for bile. A positive test for bile in urine indicates the presence of bilirubin and is also associated with the excretion of bile salts. When Ehrlich's reagent is added to a bile-positive urine, the strong hydrochloric acid in the reagent converts bile salts to the acids, which are insoluble. If these are present in sufficiently high concentration, they impart a milky appearance to the urine and may even precipitate. Ehrlich's reagent also acts on the bilirubin to produce a brown pigment. The precise shade of color and degree of turbidity resulting from the addition of the reagent depends on such factors as the concentrations of the urinary pigments, bilirubin, bile salts, and urobilinogen. For example, if little urobilinogen and relatively high concentrations of bile salts and bilirubin are present, as in severe obstructive jaundice, the addition of Ehrlich's reagent gives a turbid, brown suspension. On the other hand, if urobilinogen is present in substantial concentration in addition to bilirubin and bile salts, as in diffuse hepatic disease, the red color resulting from the interaction of Ehrlich's reagent with urobilinogen mixes with the yellow-brown color to give a milky, orange-colored suspension. The interfering action of bile on the urobilinogen test may be avoided in the following way. If the urine test is positive for bile, make 8 ml. of urine slightly alkaline with 1 drop of 20% sodium hydroxide solution. Add 2 ml. of 10% barium chloride solution and mix. Then filter and, to a suitable amount of the filtrate, add an equal volume of Ehrlich's reagent.

SPLITTING OF FINGER TIPS

To the Editor:—*A contractor, when obliged to handle lumber for several days, experiences dryness and painful splitting of his finger tips. All the proprietary remedies he has tried have been of no benefit. Can you suggest anything to alleviate this problem? The handling of lumber is an occasional necessity in his work.*

D. J. Mariea, M.D., Fostoria, Ohio.

Answer.—The report submitted suggests that this patient has a contact dermatitis or dermatitis venenata of the tips of the fingers. This may have resulted because of an acquired sensitivity to the lumber he handles. It is possible, also, that there may be associated mechanical factors, such as rubbing of the finger tips on the boards when they are handled, particularly if the surfaces are rough. It is assumed that there are no other skin lesions, but other body areas should be examined, particularly webs of toes, soles, groins, and gluteal clefts. If there is evidence of skin inflammation in any of those areas, the possibility of trichophytosis with secondary trichophytid lesions on the fingers should be considered, although the history does not suggest that likelihood. Assuming the condition to be a contact dermatitis, protective dressings, cold cream applications, and instructions regarding precautionary measures at work should suffice for clearing up this condition. If, however, the dermatitis increases in severity in spite of precautionary measures and bland protective ointment, the work should be changed. The patient should be seen promptly by a dermatologist if the measures suggested are not effective in correcting the dermatitis.

ALCOHOLISM

To the Editor:—*Please give information on hospitals or institutions where formal training in the treatment of alcoholism can be obtained.*

Thomas E. Fulghum, M.D., Augusta, Ga.

Answer.—This consultant does not know of any hospitals or institutions where training in treatment of alcoholism can be secured. Requests for accepting physicians, rehabilitation counsellors, psychiatric social workers, and psychologists on a training basis in state facilities are frequently received, but, since these facilities are not organized as training centers but rather as service centers for alcoholics and their families requesting assistance with drinking problems, they are unable to provide such training. At a recent meeting in Washington with representatives from the National Institutes of Health and from the National Institute of Mental Health, this question was discussed and a need for training facilities for professional people interested in the problem was recognized. The present system is to select new employees with as much care as possible and then to give them on-the-job training.

CEREBRAL EMBOLISM

To the Editor:—*A 45-year-old man collapsed, with a loss of consciousness. Two days previously he had collapsed, without loss of consciousness, and had experienced a benumbed feeling of weakness on his entire left side. He had had a head cold for which nose drops containing ephedrine were used rather frequently. Forty-eight hours after using the drops the patient suddenly collapsed while at work and was admitted to a hospital, in a comatose state, with working diagnosis of auricular fibrillation and cerebral embolism. The diagnosis was based on an abnormal electrocardiogram tracing. X-ray showed a cardiac-thoracic ratio of 14 cm. to 30 cm.; right ventricular hypertrophy is minimal. There is indentation of the left ventricle (enlarged left auricle) by the esophagus. The impression given is of mitral stenosis. Did the nasal medication, more particularly the ephedrine, possibly play any part in causing the cerebral embolism?*

A. V. Spaeth, Cleveland, Ohio.

Answer.—Much study and attention have been given to the problem of causation or precipitation of embolism to the brain. In general, the specific embolic episodes seem unrelated to exogenous factors. Under the circumstances described, with the lapse of 48 hours from the use of ephedrine to the cerebral ictus, the relationship with the ephedrine certainly could not be established. In all probability, therefore, the cerebral embolus cannot be related to the use of the ephedrine.

TEACHING OF HYPNOSIS

To the Editor:—*Please give information on an ethical manner for teaching of hypnosis.*

F. P. McNalley, M.D., Clayton, Mo.

Answer.—Any course dealing with hypnotic techniques should not primarily stress the induction of hypnosis, since this is a relatively simple manner which requires little technical skill and little training. Some work on what can best be termed the motivational bases of human behavior seems to be a prerequisite. Any training should include not only techniques of induction but also indications and limitations for its use within the specific area involved. Precautions and potential dangers should be stressed. All such training should be under responsible medical (or dental) direction. Any use of hypnotic techniques should be for purposes within the area of one's specific specialty or usual medical practice and should not be beyond the range of his ordinary competence.

BROWN SUGAR

To the Editor:—*Is the ordinary brown sugar bought in the stores perfectly safe to be eaten on dry and cooked cereal, that is, eaten as bought?*

Philip G. Kitchen, M.D., Pocono Lake, Pa.

Answer.—Brown sugar is simply a partially refined white sugar. The sucrose content of brown sugar used in commerce ranges from about 85 to 90% and the mineral content from about 0.5 to 2%—the darker the color the less sucrose and the higher the mineral content. These minerals consist chiefly of calcium, phosphorus, and iron. This consultant is unaware of any evidence indicating that brown sugar, as purchased in the store, is not safe to eat. It has a characteristic taste which some people prefer and contributes small amounts of some of the minerals, as indicated above. Brown sugar may be used as is ordinary white sugar.

VITAMIN B_{12}

To the Editor:—*Has vitamin B_{12} in gelatin any real advantage over the usual preparation given by hypodermic injection in treatment of pernicious anemia?*

M.D., North Dakota.

Answer.—There is no established advantage of vitamin B_{12} in gelatin over the conventional vitamin B_{12} preparations given parenterally. Experience and experimental studies have shown that vitamin B_{12} is stored in the body to the extent that an injection every three or four weeks provides adequate maintenance therapy in pernicious anemia.

PROFESSIONAL LIABILITY

To the Editor:—*A surgeon and an anesthesiologist recognize a situation which might possibly give rise to the filing of a claim for professional liability. The patient has consulted an attorney, but nothing more specific than that has yet occurred. Is there anything the surgeon and anesthesiologist should do at this stage?*

M.D., California.

Answer.—There are two things which should be done immediately by each of them. First, they should give a full and complete report of the entire occurrence to the company, or companies, which are carrying their professional liability insurance. Second, they should make a full and complete report of the situation to the proper individual in their county society so that the matter can be referred to the Malpractice Review Committee, or whatever similar committee exists in their locality.

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Acad.—Academy
Am.—American
A.—Association
Coll.—College
Commn.—Commission
Comm.—Committee
Conf.—Conference
Cong.—Congress
Dist.—District
Div.—Division
Found.—Foundation
Hosp.—Hospital
Indust.—Industrial
Inst.—Institute
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Pharm.—Pharmaceutical
Phys.—Physicians
Soc.—Society
Surg.—Surgery
Surgs.—Surgeons
S.—Surgical

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